CURTIS'S
BOTANICAL MAGAZINE,

ILLUSTRATING AND DESCRIBING

Plants of the Royal Botanic Gardens of Kew,

AND OF OTHER BOTANICAL ESTABLISHMENTS;

EDITED BY

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K.C.M.G., C.I.E., F.R.S., F.L.S., ETC.,

LATE DIRECTOR, ROYAL BOTANIC GARDENS, KEW.

VOL. II.

OF THE FOURTH SERIES.

(*Or Vol. CXXXII. of the Whole Work.*)

Now, did I not so near my labours end,
Strike sail, and hastening to the harbour tend,
My song to flowery gardens might extend—
To teach the vegetable arts, to sing
The Pæstum roses, and their double spring.
The late narcissus, and the winding trail
Of bear's-foot, myrtles green, and ivy pale.

DRYDEN'S VIRGIL.

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MO. BOT. GARD...
1906

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To

HENRY NICHOLAS RIDLEY, M.A., F.L.S.

DIRECTOR, BOTANIC GARDENS, SINGAPORE,

WHO

WITH UNTIRING GENEROSITY

HAS

SURPASSED ALL RECENT CONTRIBUTORS

IN ENRICHING THE KEW COLLECTIONS

WITH

RARE AND NOVEL PLANTS.

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M.S. del. J.N. Fitch lith.

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Tab. 8052.

ASPARAGUS Sprengeri.

Natal.

Liliaceæ. Tribe Asparageæ.

Asparagus, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 765; *Baker in Journ. Linn. Soc.* vol. xiv. 594.

A. Sprengeri, *Regel in Acta Horti Petrop.* vol. xi. p. 302, *et in Gartenfl.* 1890, p. 490, fig. 80; *Baker in Thiselton-Dyer, Fl. Cap.* vol. vi. p. 271; *A. falcato,* Linn., proximus, phyllocladiis linearibus et bracteolis lanceolatis acuminatis differt.

Frutex scandens. *Caulis* teres, sulcatus, ramosissimus. *Foliorum* aculei 1–2 lin. longi, decurvi. *Phyllocladia* solitaria vel 2–4-natim aggregata, plana, linearia, recta vel leviter curvata, glabra, apice pungentia, ad 1¼ poll. longa, et 1 lin. lata. *Flores* racemosi, 3 lin. diam.; racemi solitarii vel geminati, 1½ poll. longi; pedicelli medio articulati; bracteæ lanceolatæ, acuminatæ, pedicellis dimidio breviores. *Perianthium* dilute carneum; segmenta obovato-oblonga, interiora apice denticulata. *Filamenta* complanata, perianthii segmentis dimidio breviora; antheræ ovales, aurantiacæ. *Ovarium* oblongum, basi constrictum.—*A. æthiopicus,* var. *ternifolius,* Baker in Saunders, Refug. Bot. t. 261. *A. ternifolius,* Hook. f. in Bot. Mag. t. 7728.

An opportunity has here been taken of depicting the fruiting state of a plant, whose flowers were represented in t. 7728 under the name of *A. ternifolius*, Hook. f., a plant which is of as great decorative value when in fruit as in flower. It was first described by Regel from plants imported from Natal by Messrs. Dammann & Co., of Naples, from whom the Kew plant was originally obtained. It was also found in Natal by Mr. Thomas Cooper, who sent plants to the late Mr. Wilson Saunders, in whose collection it flowered.

This species has been confused with *A. falcatus*, Linn., and *A. æthiopicus*, Linn. The former is a much more robust plant, which at Kew attains a height of thirty feet, while *A. Sprengeri* rarely exceeds four feet; its phyllocladia also are broader and more rigid. From the latter it is distinguished by its usually less numerous phyllocladia and larger flowers with shorter filaments. The Indian *A. gonocladus*, Baker, is also closely allied, but its inner perianth-segments are not denticulate at the apex.

Descr.—A climbing shrub. *Stem* terete, sulcate, much-

branched. *Leaf-spines* one to two lines long, decurved. *Phyllocladia* solitary, or in clusters of two to four, flat, linear, sometimes slightly curved, glabrous, pungent at the apex, an inch to an inch and a quarter long, about a twelfth of an inch wide. *Flowers* a quarter of an inch in diameter, in solitary or geminate racemes about an inch and a half long; pedicels articulated near the middle; bracts half as long as the pedicels, lanceolate, acuminate. *Perianth-segments* obovate-oblong, the inner denticulate at the apex, pale pink. *Filaments* flattened, about half as long as the perianth-segments; anthers oval, orange-colour. *Ovary* oblong, constricted below. *Fruit* globose, 3 lin. in diam., crimson.—C. H. Wright.

Fig. 1, portion of stem bearing three racemes; 2, a node, showing the insertion of the phyllocladia and racemes; 3, fruit:—*all enlarged.*

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Tab. 8053.

CYNORCHIS compacta.

Natal.

Orchidaceæ. Tribe Ophrydeæ.

Cynorchis, *Thouars*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 628.

Cynorchis compacta, *Reichb. f. in Flora*, 1888, p. 149: species distinctissima, ab affinibus floribus albis rubro-punctatis differt.

Herba terrestris, tuberifera. *Tubera* ovoidea vel fusiformia, subterranea, ½–1 poll. longa. *Caulis* validus, brevis, monophyllus, basi vaginis laxis obtectus. *Folia* ovato-oblonga, sæpissime breviter acuminata, suberecta, membranacea, circa 2–3 poll. longa. *Scapus* solitarius, erectus, 4–7 poll. altus; racemus multiflorus. *Flores* albi, labelli disco roseo-punctato. *Bracteæ* lanceolatæ vel ovato-lanceolatæ, acuminatæ, 2–6 lin. longæ. *Pedicelli* 4–9 lin. longi. *Sepalum* posticum erectum, ovatum, obtusum, 2 lin. longum; sepala lateralia patentia, obliqua, ovata, obtusa, 2½ lin. longa. *Petala* ovato-oblonga, obtusa, subobliqua, 2 lin. longa. *Labellum* patens, trilobum, 4–5 lin. longum, lobis orbiculari-obovatis crenulatis; discus obscure bilamellatus; calcar clavatum, arcuatum, 1½ lin. longum. *Columna* brevissima.

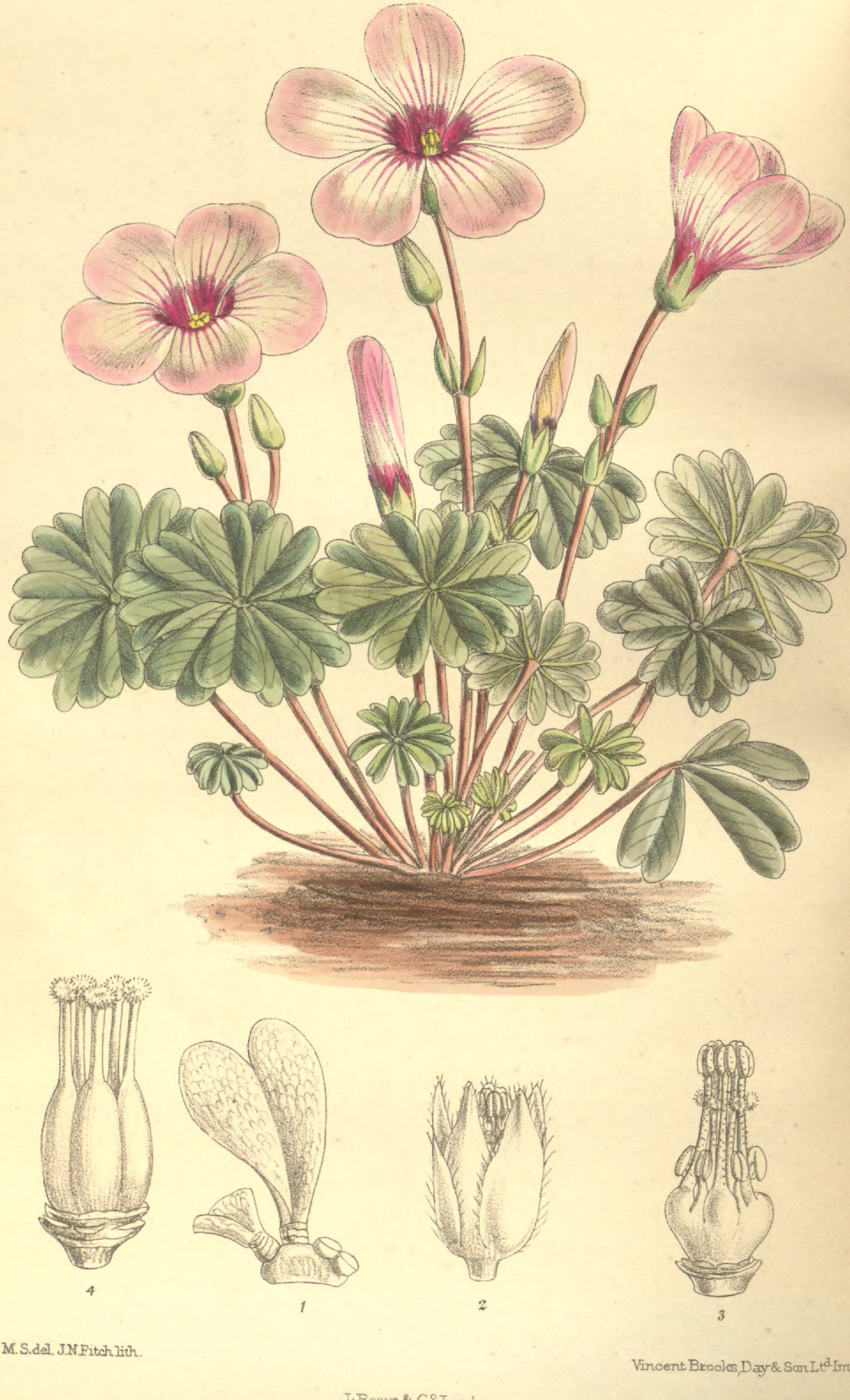
Cynorchis is a small, exclusively African genus nearly allied to *Habenaria*, but separated by common consent on account of the broad, more or less concave or galeate rostellum. About thirty species are known, the majority being from the Mascarene Islands, seven others Tropical African, while the present is the only known representative in extra-tropical South Africa. Four have already been figured in this Magazine, namely, *C. lowiana*, Reichb. f. (t. 7551), at that time thought to be synonymous with *C. purpurascens*, Thouars; *C. grandiflora*, Kidl. (t. 7564); *C. villosa*, Rolfe (t. 7845), remarkable for its very hairy flowers; and *C. purpurascens*, Thouars (t. 7852). These species are very diverse in appearance, and several of the others have much smaller flowers. Unlike *Habenaria*, the predominating colour of the flowers is purple, in which respect the present species is exceptional.

C. compacta, Reichb. f., was originally discovered by Mr. John Sanderson, in Natal, about the year 1869, and a drawing was sent to Kew, from which the species was ultimately described. In 1895 it was rediscovered by Mr. J. M. Wood, on rocks near Emberton, at about 2000 feet

altitude. The plants figured were presented by Messrs. Sander & Sons, St. Albans, in 1899, and they flower annually in a cool orchid house, from February to about April, the flowers lasting about two months. Grouped in pans, this little terrestrial orchid is very pretty.

Descr.—A dwarf terrestrial herb, bearing ovoid or fusiform subterranean tubers from about half to an inch long. *Stems* very short, rather stout, bearing one fully developed leaf, and one or two loose tubular sheaths, the upper having occasionally a short, free limb. *Leaf* ovate-oblong, usually shortly acuminate, suberect, membranaceous, about two to three inches long. *Scape* solitary, erect, four to seven inches high; raceme many-flowered. *Flowers* white, disc of the lip spotted with red. *Bracts* lanceolate or ovate-lanceolate, acuminate, two to six lines long. *Pedicels* four to nine lines long. *Dorsal* sepal erect, ovate, obtuse, two lines long; lateral sepals spreading, oblique, ovate, obtuse, two and a half lines long. *Petals* ovate-oblong, obtuse, slightly oblique, two lines long. *Lip* spreading, three-lobed, four to five lines long; lobes obovately orbicular, somewhat crenulate; disc bearing a pair of longitudinal thin ridges; spur clavate, somewhat curved, a line and a half long. *Column* very short.—R. A. Rolfe.

Fig. 1, flower; 2 and 3, column seen from the side and front; 4, a pollinium :—*all much enlarged.*



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Tab. 8054.

OXALIS adenophylla.

Chili.

Geraniaceæ. Tribe Oxalideæ.

Oxalis, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 276.

Oxalis adenophylla, *Gill. in Hook. Bot. Misc.* vol. iii. (1833) p. 165; *Gay Fl. Chil.* vol. i. (1845) p. 458; species ex affinitate *O. enneaphyllæ,* Cav. sed caudice bulbiformi non rhizomatoso et floribus roseis diversa.

Herba caule brevissimo. *Bulbus* 1–1½ poll. diam., extus squamis lineari-lanceolatis glabris intus foliorum basibus persistentibus longe-ciliatis compositus. *Folia* glabra; foliola 12–22, subsessilia, obcordata, basi attenuata, lobis glaucis laxe cellulosis carnosis; petiolus 2–5 poll. longus; petioluli brevissimi, incrassati, leviter pilosi, nigro-violacei. *Pedunculi* petiolis æquilongi, 2–3 flori, 2-bracteolati. *Flores* heterostyli, 1½–2 poll. diam. *Sepala* lanceolata, subacuta, ciliata, fere 3 lin. longa. *Petala* obovato-obcordata, patula, intense rosea, basi purpurea, circa 1 poll. longa. *Stamina* 10, quorum 5 longiora stylos superantia, approximata, omnium filamentis basi incrassatis coalitis. *Styli* 5, stamina breviora excedentia, stigmatibus capitatis. *Capsula* oblonga.—*O. Bustillosii,* Phil. in Linnæa, vol. xxviii. (1856) p. 614.

O. adenophylla is closely allied to *O. enneaphylla* (B M. t. 6256) from Fuegia and the Falkland Islands. It differs mainly in the bulb-like rootstock, which in the latter is a horizontal rhizome.

In Reiche's Flora of Chili (1896), where eighty-eight species of *Oxalis* are enumerated, the genus is divided into two sections, *Palmatifolia* and *Trifolia*. The two species in question belong to the *Palmatifolia* group, which comprises only two others, namely, *O. laciniata* and *O. squamoso-radicosa*.

The specific appellation, gland-leaved, evidently refers to the dark-coloured petiolules, which, however, are non-secretive. *O. adenophylla*, like some other members of the genus, possesses heterostyled flowers, one form, that here figured, having mid-styled flowers; but both long and short-styled flowers have been observed.

The plant from which the drawing was made was presented to Kew in 1902 by Mr. H. J. Elwes, F.R.S., who collected it in Chili, near San Martin, at an elevation of over six thousand feet, growing by rivulets above the tree line.

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It requires the same treatment as *O. enneaphylla*, and will no doubt prove equally suited to cultivation in the rockery. For the present the precaution is taken of wintering it in a cold frame.

Descr.—An acaulescent herb. *Bulb* one to one and a half inches across, composed externally of linear-lanceolate glabrous scales, and internally of the persistent bases of the petioles bearing long bristles. *Leaves* glabrous, with twelve to twenty-two subsessile, obcordate leaflets, attenuate at the base; lobes slightly fleshy, and glaucous; petiole two to five inches long; petiolule short, thickened, slightly hairy, and of a deep violet colour. *Peduncles* two- to three-flowered, bearing two bracteoles, of the same length as the petioles. *Flowers* heterostyled, one and a half to two inches across. *Sepals* lanceolate, subacute, ciliate, nearly three lines long. *Petals* obovate-obcordate, spreading, deep rose-coloured, with a purple base, about one inch long. *Stamens* ten, alternately long and short, erect. *Stigmas* capitate. *Capsule* oblong.—L. Farmar.

Fig. 1, leaflet and petiolules; 2, flower with petals removed; 3, stamens and pistil; 4, pistil:—*all enlarged.*

M.S. del, J.N. Fitch lith

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Tab. 8055.

COLCHICUM crociflorum.

Turkestan.

Liliaceæ. Tribe Colchiceæ.

Colchicum, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 821; *Baker in Journ. Linn. Soc.* vol. xvii. p. 423.

Colchicum crociflorum, *Regel in Acta Hort. Petrop.* vol. vii. p. 385, *nec Sims, nec Schott et Kotschy*; *Gartenfl.* 1881, p. 33, t. 1035, figg. 1 et 2, a *C. luteo*, Baker, foliis hysteranthiis et perianthii colore differt.

Cormus ovoideo-oblongus, 2 poll. longus, 10 lin. diam, siccitate calcarius, tunicis castaneis. *Folia* linearia, obtusa, minute denticulata. *Flores* 2–4 fasciculatim dispositi. *Perianthii* tubus 3–4 poll. longus, cylindricus, apice leviter dilatatus, albus; lobi oblongi, obtusi, 1 poll. longi, 3–4 lin. lati, albi, extus late purpureo-striati. *Filamenta* brevia, ad sinum antheræ affixa; antheræ erectæ, lineares, basi sagittatæ, luteæ. *Styli* 3, quam stamina paullo longiores.—*Synsiphon crociflorus*, Regel in Acta Hort. Petrop. vol. vi. p. 491; Benth. et Hook. f. Gen. Pl. vol. iii. p. 821.

Regel originally described this plant as generically distinct from *Colchicum*, on the ground that the styles were united. On the receipt of better material Regel found this not to be the case, and reduced his genus *Synsiphon* to *Colchicum*. The present species, however, is the most distinct in the genus. Owing to the great superficial resemblance of *Colchicum* to *Crocus*, it is not surprising that three species of the former have been named *crociflorum*. Of these, one described by Sims (B. M. t. 2673) is a form of *C. autumnale*, Linn., another described by Schott & Kotschy, is reduced to *C. montanum*, Linn., while the present plant, although the last described, is the one for which the name *crociflorum* must be retained.

Most species of *Colchicum* have the perianth either uniformly coloured or chequered outside, but in this case the pure white ground of each lobe is relieved by the broad central band of pink, which gradually becomes dark purple.

The plant figured flowered in the Alpine House at Kew in January, 1905, and was raised from corms imported from Kokan by Mr. C. G. Van Tubergen, jun., of Haarlem.

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Descr.—*Corm* ovoid-oblong, two inches long, ten lines in diameter, chalk-like when dry; tunics chestnut-colour. *Leaves* very short at time of flowering, afterwards linear, obtuse, minutely denticulate. *Flowers* from two to three from each corm. *Perianth-tube* three to four inches long, cylindrical, slightly dilated at the apex, white; lobes oblong, obtuse, one inch long, three to four lines wide, white with a central band of purple outside. *Filaments* short, inserted in the basal sinus of the anther; anthers erect, linear, sagittate at the base, yellow. *Styles* 3, a little longer than the stamens.—C. H. Wright.

Figs. 1–2, stamens; 3, upper part of one style; 4, corm:—1–3, *enlarged*; 4, *natural size.*

M.S. del J.N. Fitch lith.

Vincent Brooks, Day & Son Lt.d Imp.

Tab. 8056.

WITTMACKIA lingulata.

West Indies.

Bromeliaceæ. Tribe Bromelieæ.

Wittmackia, *Mez in Mart. Fl. Bras.* vol. iii. III. p. 275.

Wittmackia lingulata, *Mez l.c. et in DC. Monogr. Phan.* vol. ix. p. 140; a speciebus reliquis floribus longioribus differt.

Folia circa 10, rosulatim disposita, rigida, lorata, apice rotundata, breviter cuspidata, circa 2 ped. longa, $2\frac{1}{2}$ poll. lata; aculei breves, basi dilatati, atri, 3 lin. inter se distantes. *Scapus* primum floccosus, demum glabrescens; vaginæ lanceolatæ, integræ vel paucidentatæ, circa $1\frac{3}{4}$ poll. longæ; bracteæ lanceolatæ, membranaceæ; panicula pinnatim ramosa; flores numerosi, sessiles. *Sepala* alba, ovata, aristata. *Petala* ovata, e basi oblonga, lutea. *Stamina* interiora ad petala affixa, iisque multo breviora; filamenta prope apicem antherarum mucronatorum affixa. *Ovarium* glabrum, subcylindricum.—*Bromelia lingulata*, Linn. Sp. Pl. ed. 1, p. 285; Mill. Gard. Dict. ed. 8, n. 2; Ait. Hort. Kew. ed. 2, vol. ii. p. 201. *Hoplophytum lingulatum*, Beer, Bromel. p. 139. *Chevalliera lingulata*, Griseb. Fl. Brit. W. Ind. p. 591. *Æchmea lingulata*, Baker in Journ. Bot. 1879, p. 164, et Handb. Bromel. p. 45, partim. *Bromelia ramosa vel racemosa, foliis arundinaceis serratis*, Plum. Nov. Gen. Pl. p. 46, t. 8 (1703). *B. foliis serratis spinosis, etc.*, Burm. Pl. Amer. Plum. p. 53, t. 64, fig. 1 (1755).

This plant was described as long ago as 1703 by Plumier (*l.c.*) as an American plant, and in 1759 Philip Miller enumerated it in the 7th edition of his Dictionary as in cultivation, having been received by him from St. Christopher's (now St. Kitt's). It appears never to have become commonly cultivated, and has rarely been sent home by collectors, although Grisebach states that it grows in several of the West Indian islands. The plant figured was grown in the Royal Botanic Gardens, Glasnevin, and communicated by Mr. F. W. Moore, A.L.S.

From the above cited synonmy it will be seen that this species has been placed in several different genera; that in which it is now included differs from *Æchmea* in its petals being destitute of ligules, and from *Hohenbergia* in the ovules being umbonate or obtuse, not caudate, at the apex. Besides the present plant, three species have been described, viz.—*W. odora*, Mez, *W. Glaziovii*, and *W. patentissima*, Mez, all of which are natives of Brazil, while the first named extends into Guiana and the West Indies. *W. odora* was cultivated at Glasgow by Sir W. Hooker.

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There are wild specimens in the Kew Herbarium from Trinidad, St. Vincent, St. Lucia, Martinique, and St. Thomas, and it is described as growing on trees, and in fissures of rocks.

Descr.—*Leaves* about ten in a rosette, firm, lorate, rounded, shortly cuspidate, about two feet long, two inches and a half wide; spines short, broad-based, black, about three lines apart. *Scape* floccose when young, glabrescent in age; sheaths lanceolate, entire, or sparingly toothed, about an inch and three-quarters long; bracts lanceolate, membranous; panicle pinnately branched; flowers numerous, sessile. *Sepals* white, ovate, bearing an awn nearly one line long. *Petals* ovate from an oblong base, yellow. *Stamens* much shorter than the petals; filaments inserted near the apex of the mucronate anthers, the three inner adnate to the petals. *Ovary* glabrous, subcylindric.—C. H. Wright.

Fig. 1, a flower; 2, petal; 3, stamen; 4, stamen showing the insertion of the filament; 5, style-arms; 6, inflorescence:—1–5, *enlarged*; 6, *one-third natural size.*

M. S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son Lt.d Imp

Tab. 8057.

EULOPHIA NUDA.

India and China.

Orchidaceæ. Tribe Vandeæ.

Eulophia, *R. Br.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 535; *Rolfe in Thiselton-Dyer Fl. Trop. Afr.* vol. vii. p. 47.

Eulophia nuda, *Lindl. Gen. & Sp. Orch.* p. 180; *Hook. f. Fl. Brit. Ind.* vol. vi. p. 5; inter species asiaticas sectionis *Cyrtoperæ* labello subintegro distincta.

Herba terrestris rhizomate tuberifero. Tubera depresso-globosa, angulata, 1½–3 poll. lata, approximata. *Surculi* 2–3-phylli, basi vaginis imbricati. *Folia* lanceolata vel elliptico-lanceolata, acuminata, plicata, basi angustata, petiolata; limbus 4–12 poll. longus, ½–2½ poll. latus; petiolus 4–9 poll. longus; vaginæ lanceolatæ, acuminatæ, striatæ, ½–4 poll. longæ. *Scapi* erecti, in axillis vaginarum orti, 1–2 ped. alti, basi vaginis lanceolatis obtecti; racemi laxi, multiflori. *Bracteæ* lineari-lanceolatæ, acuminatæ, ½–1¼ poll. longæ. *Pedicelli* 1–1½ poll. longi. *Flores* speciosi, purpurei, pallide rosei vel subvirides; labelli discus aureus. *Sepala* erecta, oblongo-lanceolata, acuta, 1–1¼ poll. longa. *Petala* incurva, cum columna galeam formantia, elliptico-oblonga, obtusa vel apiculata, ¾–1 poll. longa. *Labellum* subintegrum, recurvum, obtusum, undulatum, petalis longius; calcar conicum, acutum vel subobtusum, 3–9 lin. longum. *Columna* clavata, arcuata, 5–7 lin. longa, apice bicornuta, basi in pedem producta.—*Eulophia bicolor*, Dalz. in Hook. Kew Journ. Bot. vol. iii. p. 343. *Cyrtopera fusca*, Wight Ic. t. 1690; *C. plicata*, Lindl. Gen. & Sp. Orch. p. 190. *C. nuda*, Reichb. f. in Flora, 1872, p. 274. *C. mysorensis*, Lindl. in Journ. Linn. Soc. vol. iii. p. 32.

Eulophia nuda, Lindl., is a widely diffused and very variable orchid, if all the above-named forms are correctly referred to a single species, as was done by Sir Joseph Hooker in the "Flora of British India." It ranges from Nepal to Ceylon and Burma, and thence to the province of Yunnan, in Western China, and the differences of colour are remarkable, from rose-purple to delicate pink and very pale green. It was assumed, when the example here figured first flowered, that the Burmese and Chinese plant could be separated from the Indian, on account of its longer spur, but one Burmese example (that coloured yellow-greenish on the plate) is as short as in the Indian forms, and as both show the same range of variation in colour, it seems best to regard them as belonging to a single polymorphic species.

The forms here figured are selected from plants presented to Kew in 1902 by H. H. Hildebrand, Esq., C.I.E., late Superintendent of the S. Shan States of Upper

Burma. They flowered in a warm house in April and May, 1905, and showed various shades of colour between the extremes represented on the plate.

The genus, which is now held to include *Cyrtopera*, Lindl., is widely diffused through the tropics, and is nearly allied to *Lissochilus*, but the species are generally less showy, and are not much cultivated. Six others, however, have been figured in the Botanical Magazine, namely:—*E virens*, Lindl. (t. 5579), *E. macrostachya*, Lindl. (t. 6246), *E. sanguinea*, Hook. f. (*Cyrtopera sanguinea*, Lindl., t. 6161), *E. euglossa*, Reichb. f. (t. 5561), *E. Zeyheri*, Reichb. f. & Sond. (t. 7330), and *E. Woodfordii*, Rolfe (*Cyrtopodium Woodfordii*, Sims, t. 1814).

Descr.—A terrestrial herb, with thickened tuber-bearing rhizomes, the tubers depressed-globose, and somewhat angled. *Shoots* bearing two or three leaves, surrounded by several tubular protecting sheaths, having a lanceolate, acute apex. *Leaves* lanceolate or elliptic-lanceolate, acuminate, plicate, narrowed at the base into the petiole; blade from about four to over twelve inches long, half to two and a half inches broad, bright green; petioles four to nine inches long. *Scape* appearing from the lower sheath together with the leaves, one to about two feet high, with several lanceolate spathaceous sheaths towards the base; racemes lax, many-flowered. *Bracts* linear-lanceolate, acuminate, half to one and a quarter inches long. *Pedicels* an inch to an inch and a half long. *Flowers* very variable in colour, ranging from rose-purple to pink, and even yellow-green. *Sepals* erect, oblong-lanceolate, acute, an inch to an inch and a quarter long. *Petals* incurved, forming with the column a hood over the tip, elliptic-oblong, obtuse or apiculate, three-quarters to an inch long. *Lip* nearly entire, recurved, obtuse, and somewhat undulate, longer than the petals; disc bearing several dwarf linear keels; spur conical, acute, or somewhat obtuse, from a quarter to nearly three-quarters of an inch. *Column* clavate, and somewhat curved, about half an inch long; anther-case two-horned at the apex, base produced into a foot.—R. A. Rolfe.

Fig. 1, flower with the greater part of the segments removed; 2, anther case; 3, pollinarium; 4, whole plant; 5, pink-flowered form; 6, green-flowered form:—4, *much reduced*; *the rest enlarged.*

M.S.del, J.N.Fitch lith

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Tab. 8058.

SAXIFRAGA SCARDICA.

Balkan Peninsula.

SAXIFRAGACEÆ. Tribe SAXIFRAGEÆ.

SAXIFRAGA, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 635.

Saxifraga scardica, *Griseb. Spicil. Fl. Rumel.* vol. i. p. 332; *Engel. Monogr. Saxifraga,* p. 261; *Halácsy, Consp. Fl. Græc.* vol. i. p. 598; *W. I. in The Garden,* 1904, p. 323; ab affini *S. rocheliana,* Sternb., foliis oblongis magis minusve acutis recedit.

Planta cæspitosa, caudiculis densissime foliatis. *Folia basalia* patula, oblonga, acuta vel subacuta, $\frac{1}{4}$–$\frac{1}{2}$ poll. longa, rigida, supra leviter concava, foveolis intramarginalibus 5–15, subtus convexa, siccitate carinata, margine cartilagineo, usque ad vel ultra medium ciliata. *Caules floriferi* erecti vel ascendentes, usque ad 3 poll. longi, 1–11-flori, glanduloso-pilosi, floribus corymbosis. *Folia caulina* sparsa, oblonga, basin versus angustata, acuta vel apiculata. *Calyx* præsertim infra medium glanduloso-pilosus; lobi ovati, acutiusculi vel obtusi, $1\frac{1}{2}$ lin. longi. *Petala* obovata, basi cuneata, $4\frac{1}{2}$ lin. longa, irregulariter 5–7-venia. Filamenta stylos paullo superantia.—*Saxifraga Sartorii,* Heldr. in Boiss. Fl. Or. Suppl. p. 248.

The plants figured were purchased from F. Sündermann of Lindau im Bodensee, Bavaria, and flowered in the Alpine House at Kew in March of last year. *F. scardica* is also grown in the Rock Garden, where it is quite hardy, and flowers freely during March and April. It may be expected to supersede, to some extent, the well-known *S. burseriana,* L., in popular favour, as it is more showy, and stands damp weather better. *F. scardica,* as cultivated at Kew, has obtuse sepals and less acute leaves than the type, and in these respects approaches *S. rocheliana,* Sternb., which may be distinguished from its allies by its spathulate leaves. We have little hesitation, however, in retaining the Kew plant under *S. scardica,* since Halácsy has recently extended the limits of that species by including in it *S. Sartorii,* Heldr., which has obtuse sepals and relatively broad leaves. If we accept Halácsy's views, the distribution of the species is as follows:—Mt. Scardus (Shar Dagh), Albania, Mts. Olympus and Ossa, Thessaly, Mt. Delphi, Eubœa, Mt. Parnassus, Phocis, and a purple-flowered variety (var. *erythrantha,* Halácsy) on Mt. Kyllene, Achaia.

The little pits inside the margin on the upper surface of

the leaves in *S. scardica* and many other Saxifrages are pores for the excretion of water. The passage of water is rendered possible by the pits being lined with a tissue of very thin-walled cells. The water excreted contains carbonate of lime, which is left behind by evaporation, and forms a white scale covering the pit. In dry weather the scale closes tightly down over the pit, and acts as a stopper, preventing the drying-up of the leaf, while in wet weather it is loosened, and readily admits of the passage of water underneath it.

Descr.—A tufted plant. *Leaves* crowded on the vegetative stems, rather spreading, oblong, acute or subacute, a quarter to half an inch long, rigid, slightly concave above, convex below, keeled in the dried state, ciliate up to or beyond the middle, upper surface with a row of five to fifteen pits inside the cartilaginous margin. *Flowering stems* erect or ascending, the largest three inches long, one- to eleven-flowered, clothed with gland-tipped hairs. *Cauline leaves* oblong, narrowed towards the base, acute or apiculate. *Calyx* glandular-hairy, especially the lower half; lobes ovate, obtuse, or rather acute, one and a half lines long. *Petals* obovate, wedge-shaped at the base, four and a half lines long, irregularly five- to seven-veined. *Filaments* slightly exceeding the styles.—T. A. Sprague.

Fig. 1, leaf; 2, calyx and pistil; 3, anther:—*all enlarged.*

M S del. J.N. Fitch lith.

Vincent Brooks, Day & Son Lt.d Imp.

L. Reeve & Co. London

Tab. 8059.

IRIS sieheana.

Asia Minor.

Irideæ. Tribe Moræeæ.

Iris, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 686.

Iris sieheana, *Lynch in Gard. Chron.* 1904, vol. i. p. 282; *The Garden,* 1905, vol. lxvii. p. 192; *I. persicæ* proxima, foliis rigidioribus et perianthii colore differt.

Bulbus ovoideus, 6 lin. diam., tunicis brunneis. *Folia* circa 6, e basi 6 lin. lata ad apicem attenuata, 3½ poll. longa, rigida, marginibus incurvis albis cartilagineis. *Scapus* brevis, uniflorus; spathæ 1¼ poll. longæ; flores 2½ poll. diam. *Perianthii* tubus tenuis, 1 poll. longus; segmenta exteriora subpanduriformia, 2 poll. longa, grisea, rubro-purpureo striata, apice rubro-purpurea, crista lutea albo-marginata purpureo-maculata; segmenta interiora oblanceolata, 9 lin. longa, 3 lin. lata, grisea, rubro-purpureo striata. *Styli* rami erecti; cristæ suborbiculares, 7 lin. diam.—*I. Haussknechtii*, Siehe in Gard. Chron. 1901, vol. i. p. 313, non Bornm.; *I. persica*, var. *magna*, Siehe, l.c.

Apart from colour, there is very little to separate this plant from *Iris persica*, Linn. (Bot. Mag. t. 1), which, however, has the inner perianth-segments toothed. The peculiar colour of the flowers of the present plant is difficult of definition, and has been compared with that of the soil on which the plant grows. It is produced by a silvery-grey ground being covered with a large number of fine, closely-placed, reddish lines. This species was introduced from Asia Minor by Mr. W. Siehe about 1901, and distributed as *I. Haussknechtii*, a name which had been previously given by Bornmüller to a plant belonging to the section *Apogon*. At Kew this species commences flowering in a south border in February, and produces a succession of flowers for several weeks.

Of the various species, besides *I. persica*, figured in the present work belonging to the section *Juno* (characterized by the small spreading inner perianth-segments), the present approaches nearest to *I. rosenbachiana*, Regel (t. 7135), which differs in having broader leaves and larger, acute crests. The latter is found in Turkestan, at an elevation of from 6,000 to 9,000 feet. This section occurs chiefly in Asia Minor and Western Asia, but one species, *I. Aitchisoni*, Boiss., is found in Afghanistan and

the Punjab, and another, *I. alata*, Poir. (Bot. Reg. t. 1876), as far west as Portugal and Algeria.

Descr.—*Bulb* ovoid, six lines in diameter, tunics brown. *Leaves* about six, three inches and a half long, gradually tapering from a base six lines wide, rigid, margins incurved, white and cartilaginous. *Scape* short, one-flowered; spathes an inch and a quarter long; flowers two inches and a half in diameter. *Perianth-tube* slender, an inch long; outer segments almost pandurate, two inches long, silvery-grey, closely striped with reddish-purple, apex entirely reddish-purple; crest yellow, on a white ground spotted with purple; inner segments oblanceolate, three-quarters of an inch long, and a quarter of an inch wide, silvery-grey, closely striped with reddish-purple. *Style-arms* erect; crests suborbicular, about two-thirds of an inch in diameter.—C. H. Wright.

Figs. 1 and 2, anthers; 3, part of a style-arm:—*all enlarged.*

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M.S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son Lith. Imp.

L. Reeve & Co. London.

Tab. 8060.

LONICERA pileata.

Central and Western China.

Caprifoliaceæ. Tribe Loniceræ.

Lonicera, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 5.

Lonicera (§ Isika) **pileata**, *Oliver in Hook. Ic. Pl.* t. 1585; *Rehder in Rep. Missouri Bot. Gard.*, 1903, p. 76; a *L. ligustrina*, Wall., differt imprimis foliis obtusioribus minoribus.

Frutex ramosissimus, circa 1 ped. altus, ramis ramulisque horizontalibus tenuibus teretibus puberulis. *Folia* disticha, brevissime petiolata, oblongo-lanceolata, obtusa, glabra, sempervirentia, supra intense viridia, subtus pallidiora, ½–1 poll. longa, 3–5 lin. lata. *Flores* geminati. *Pedunculi* ½ lin. longi. *Bracteæ* herbaceæ, lanceolato-subulatæ, basi plicis duabus instructæ, 1 lin. longæ; bracteolæ cupulatim connatæ, ovaria includentes glandulosæ. *Calycis* dentes breves, obtusi, marginibus glandulosis; tubus superne duobus annulis cinctus in vaginam reversam supra bracteolarum cupulam calyptratim productus. *Corolla* pallide flava, extus pilosa; limbus subæqualis, patens, quam tubus gibbosus dimidio brevior; lobi ovato-rotundati. *Stamina* exserta, filamentis subæqualibus pilosis. *Stylus* staminibus æquilongus, pilosus. *Ovaria* glabra inter se libera.—*L. ligustrina*, var. *pileata*, Franchet in Journ. de Bot. x. p. 317.

This *Lonicera* belongs to Rehder's sub-section, *Pileatæ*, which comprises two other species, viz. the Chinese *L. gynochlamydea*, Hemsl., and the Indian *L. ligustrina*, Wall. They are readily distinguished from all other members of the genus by a peculiar downward cap-like production of the calyx over the connate bracteoles.

L. pileata is singular among cultivated Honeysuckles in having evergreen foliage, and in its habit, which is dwarf and spreading like that of *Cotoneaster horizontalis*.

The plant from which the figure was drawn was presented to Kew in 1902 by Messrs. James Veitch & Sons, who raised it from seed collected by Mr. E. H. Wilson.

It is quite hardy, and flowers appear in April.

The variety *yunnanensis* of Rehder differs only in the very small, suborbicular to broadly ovate, rather thick leaves.

Descr.—A much-branched, low, horizontally spreading, evergreen shrub, about one foot high. *Branches* slender, terete, puberulous. *Leaves* oblong-lanceolate, obtuse, glabrous, dark green above, pale beneath, half to one inch

long, three to five lines broad, shortly petioled. *Flowers* in pairs, almost sessile. *Bracts* herbaceous, lanceolate-subulate, one line long, with two basal folds. *Calyx* encircled by two rings, with a cap-like downward production at the base; teeth short, obtuse, glandular on the margins. *Corolla* pale yellow, pilose outside; limb almost equal, spreading, about half as long as the gibbous tube; lobes ovate-rotundate. *Stamens* exceeding the corolla, about as long as the style; stamens and style pilose. *Ovaries* glabrous, free from each other.—L. Farmar.

Fig. 1, a pair of flowers: 2, the same, from which the corollas and bracteolar cupule have been removed; 3, bracteolar cupule; 4 and 5, front and back of anther; 6, longitudinal section of ovary:—*all enlarged.*

M.S. del, J.N. Fitch lith.

Vincent Brooks, Day & Son Lt.d Imp.

L. Reeve & Co. London.

Tab. 8061.

PRUNUS triloba.

China.

Rosaceæ. Tribe Pruneæ.

Prunus, *L.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 609.

Prunus triloba, *Lindl.* in Gard. Chron. (1857), p. 268; *Fortune* in Gard. Chron. (1860), p. 170; *Lemaire* in Ill. Hort. (1861), t. 308; *Maximowicz* in Bull. Soc. Nat. Mosc. (1879), p. 15 et Mél. Biol. xi. p. 665; a *P. persica* imprimis putamine lævi vel obscure rugoso distincta.

Frutex vel *arbuscula* ante folia evoluta florens. *Rami* vel elongati, virgati, cortice brunneo tecti, glabri, rarius apice primum pilosuli, vel admodum abbreviati, foliorum fasciculos gerentes. *Folia* obovata, ovata vel elliptico-lanceolata, raro subtrilobata, apice acuta vel acuminata, basi acuta, simpliciter vel duplo argute serrata, 1¼–2 poll. longa, ¾–1 poll. lata, matura tenuia, primum in dorso (imprimis ad nervos) adpresse pilosa, sæpe glabrescentia et demum fere glabra; petioli graciles, circiter 3 lin. longi, stipulæ subulatæ vel filiformes, sæpe bifidæ, 2–3 lin. longæ, persistentes. *Flores* solitarii e gemmis propriis secundum ramos elongatos dissitis vel hincinde in glomerulos approximatis orti, pedicellati; pedicelli ad 5 lin. longi vel primum brevissimi. *Receptaculum* semiglobosum, extus glabrum. *Sepala* ovata, obtusa, fere 1 lin. longa, glabra nisi intus ad basin sericeo-pubescentia. *Petala* rosea, suborbicularia, brevissime tenuiterque unguiculata, 5–6 lin. longa. *Stamina* ultra 30. *Ovarium* albo-tomentosum; stylus glaber, 3 lin. longus. *Drupa* subglobosa, circiter 7 lin. longa, 6 lin. diametro, uno latere obscure sulcata, tenuiter pubescens, aurea, rubro-suffusa, carne tenui subsicca facile a putamine soluta; putamen 5 lin. diametro, apiculatum, læve vel obscure rugosum, ventre leviter sulcatum, chartæ scriptoriæ crassitudine.—*Amygdalus pedunculata,* Bunge, Enum. Pl. Chin. bor. p. 22, non Pall. *Amygdalopsis Lindleyi,* Carrière in Rev. Hort. (1862), p. 91 cum icone, et in Fl. des Serres (1863), t. 1532. *Prunopsis Lindleyi,* Andr. in Rev. Hort. (1883), p. 369.

Prunus triloba has been grown as an ornamental shrub in gardens in the North of China for a long time. According to Bretschneider, the Chinese name for it is yu-ye-mei, that is "elm-leaved Prunus," a very appropriate designation. It was introduced into Europe by Fortune from Shantung about the middle of the last century. Whether it has ever been observed in the wild state is doubtful. The specific name "triloba" is little appropriate, as the lobing of the leaves is of a comparatively rare occurrence, and never very marked.

Prunus triloba is perfectly hardy in England. At Kew, it flowers in March, whilst the leaves are not fully developed before May. So far it has not produced here

mature fruits. There is a single- and a double-flowered variety, and a sport producing flowers with several pistils, instead of only one, gave rise to the creation of a distinct genus, *Amygdalopsis*, Carrière.

From Maximowicz's observations it appears that it is also somewhat variable in the amount and persistence of the tomentum of the leaves, and in the shape and size of the fruits. This is, as far as the hairiness is concerned, certainly supported by the specimens in the Kew Herbarium.

P. Petzoldii, Koch, seems to be a state of *P. triloba*, distinguished by a hard, bony, and more rugose stone, and, in this character, probably represents the wild stock. The plant figured here was raised at Kew from seed received in 1890 from Prof. Sargent, Arnold Arboretum, Harvard, who in turn had grown his specimens from seed communicated to him by Dr. Bretschneider, then at Peking. The double-flowered form has long been cultivated at Kew on a south wall, where it is a striking object when in flower. The secret of this is to cut it in hard immediately the flowers have faded.

Descr.—A *shrub* or small *tree*, flowering before the leaves. *Branches* of two kinds, either elongated, glabrous, rarely slightly pubescent at the tip, covered with a dark-brown bark, or very much shortened, and bearing a fascicle of leaves. *Leaves* obovate, ovate, or elliptic-lanceolate, rarely slightly three-lobed, acute at both ends, or with acuminate tips, simply or doubly and sharply serrate, one to two inches long, three-quarters broad, rather thin when mature, adpressedly hairy, particularly on the nerves below, when young, usually soon glabrescent, and sometimes ultimately almost entirely glabrous; petioles slender, about a quarter of an inch long; stipules subulate or filiform, often bifid, about a quarter of an inch long, persistent. *Flowers* solitary, scattered along the elongated branches, or here and there clustered, pedicelled; pedicels very short, or lengthening out to nearly half an inch. *Receptacle* semi-globose, glabrous outside. *Sepals* ovate, obtuse, almost 1 lin. long, glabrous. *Petals* pink, suborbicular, minutely clawed, about half an inch long. *Stamens* over 30. *Ovary* covered with white tomentum; style glabrous, about a quarter of an inch long. *Drupe* subglobose, about

half an inch long, slightly grooved on one side, finely pubescent, yellow, tinged with red, flesh easily separating from the stone, thin, scanty; stone apiculate, smooth or obscurely wrinkled, slightly grooved ventrally, shell not thicker than writing paper.—Otto Stapf.

Fig. 1, flower, with the petals removed; 2, pistil :—*both enlarged.*

M S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son Ltd. Imp

Reeve & Co. London.

Tab. 8062.

ARACHNANTHE annamensis.

Annam.

Orchidaceæ. Tribe Vandeæ.

Arachnanthe, *Blume*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 572.

Arachnanthe annamensis, *Rolfe in Gard. Chron.* 1905, vol. i. p. 391; aff. *A. moschiferæ*, Blume, foliis longioribus, labelli lobis lateralibus multo minoribus, lobo intermedio elongato facile distinguitur.

Herba epiphytica, erecta, circa $1\frac{1}{2}$ ped. alta, basi radices robustas emittens. *Folia* disticha, patentia vel recurva, lineari-oblonga, apice brevissime bilobata, 9–11 poll. longa, 1 poll. lata, coriacea. *Inflorescentia* circa 1 ped. longa; racemus circa 6-florus. *Bracteæ* ovato-oblongæ, obtusæ, 5 lin. longæ. *Pedicelli* circiter 12–14 lin. longi. *Flores* speciosi, rufo-brunnei, striis irregularibus flavis ornati, sepalis petalisque marginibus revolutis. *Sepalum* posticum spathulato-oblongum, subobtusum, circa $2\frac{1}{4}$ poll. longum, apice 5 lin. latum; sepala lateralia breviora, falcata, apicibus approximatis. *Petala* spathulato-oblonga, subobtusa, falcata, $1\frac{1}{2}$ poll. longa, apice $\frac{1}{2}$ poll. lata. *Labellum* mobile, 3-lobum, circa 10 lin. longum; lobi laterales triangulares, acuti, incurvi, 6 lin. longi, apicibus approximatis; lobus intermedius carnosus, compressus, carinatus, basi utrinque auriculis oblongis instructus, apice inæqualiter bifurcatus, dente infero 1 lin. longo supero subulato acuto 3 lin. longo; crista erecta, oblonga, compressa, 2 lin. longa, utrinque angulata. *Columna* lata, 5 lin. longa.

This very striking novelty is a near ally of *Arachnanthe moschifera*, Blume, the musk-scented Spider-Orchid, which is very seldom seen in cultivation. It was introduced from Annam by Messrs. Sander & Sons, through their collector, W. Micholitz, and flowered at the Royal Botanic Garden, Glasnevin, in June, 1905. It is a member of a small genus, now estimated to contain about seven species, natives of the Malayan Archipelago, the adjacent peninsula, and the Himalayas, and characterized. among other things, by the possession of an articulated and mobile lip, in which respect it differs from *Renanthera*. Three other species have been figured in this work, namely, *A. Lowii*, Benth. (t. 5475) a Bornean plant remarkable for producing two kinds of flowers, of which the significance is still unknown; *A. Cathcartii*, Benth. (t. 5845), a Himalayan plant which is seldom met with in cultivation at the present day; and *A. Clarkei*, Rolfe (t. 7077), another Himalayan species which is also rarely seen. It may be added that

the species were formerly referred to *Vanda*, under which the two former were figured.

Descr.—A stout, erect plant, about eighteen inches high, producing stout roots below. *Leaves* distichous, recurved, linear-oblong, somewhat bilobed at the apex, coriaceous, nine to eleven inches long by an inch broad, bright green. *Inflorescence* over a foot long, six-flowered in the upper half. *Bracts* ovate-oblong, obtuse, nearly half an inch long. *Pedicels* about an inch long, suffused with light pink. *Flowers* large and handsome, ground colour bright red-brown, with numerous irregular, mostly transverse, yellow bands. Dorsal sepal subspathulate-oblong, subobtuse, over two and a quarter inches long by nearly half an inch broad at the apex; lateral pair similar, but rather shorter, strongly falcate and approximate at the apex. *Petals* spathulate-oblong, sub-obtuse, falcate, an inch and a half long by half an inch broad at the apex. *Lip* mobile, strongly three-lobed, about three-quarters of an inch long; side lobes triangular, acute, incurved, nearly meeting at the apex, over half an inch long; front lobe fleshy, compressed and keeled, with an oblong auricle over a line long on either side of the base, bifurcate at the apex, the lower tooth short and fleshy, the upper subulate, acute, suberect, quarter of an inch long; crest consisting of an erect, oblong, dorsally-compressed callus, situated at the base of the front lobe, and terminating in a short, acute tooth at either angle. *Column* very stout.—R. A. Rolfe.

Fig. 1, lip; 2, the same, with one side lobe removed; 3, column; 4, anther-cap; 5 and 6, pollinarium, seen from the back and front; 7, whole plant (from a photograph):—fig. 7, much reduced, the rest enlarged.

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M.S. del, J.N. Fitch lith.

Vincent Brooks, Day & Son Ltd. Imp

Tab. 8063.

ERICA terminalis.

Southern Europe.

Ericaceæ. Tribe Ericeæ.

Erica, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 590.

Erica terminalis, *Salisb. Prodr. Stirp. in Hort. Chap. Allert. Vig.* (1796), p. 296; habitu foliis et inflorescentia *E. australi* simillima, sed sepalis anguste ovatis, corolla ellipsoideo-urceolari et antherarum cristis obsolete serrulatis differt.

Frutex usque ad 5 ped. altus; ramuli erecti, stricti, rarius diffusi, dense foliati, juniores pubescentes. *Folia* sæpissime quaterna, patentia vel rare adscendentia, lineari-oblonga, $2\frac{1}{2}$–4 lin. longa, vix acuta, subtus canaliculata, primum parce puberula, cito glabrescentia. *Flores* 4–20, rarius 30–40, in apicibus ramulorum umbellatim dispositi. *Pedicelli* circiter 2 lin. longi, puberuli, bracteolis 3 linearibus instructi. *Sepala* anguste ovato-acuminata, 1 lin. longa. *Corolla* ellipsoideo-urceolaris, $2\frac{1}{2}$ lin. longa, rosea, glabra, lobis $\frac{1}{3}$ lin. longis obtusis apice recurvis. *Antheræ* inclusæ, basi cristis divergentibus obsolete serrulatis instructæ. *Ovarium* subglobosum, pilis albis adpressis dense vestitum; stylus inclusus vel breviter exsertus.—*E. stricta*, Donn, Hort. Cantab. ed. 1 (1796), p. 45, ex Willd. Sp. Plant. vol. ii. (1799), p. 366; Andr. Heaths, t. 134, et Heathery, t. 92. *E. pendula*, Wendl. Bot. Beobacht. p. 48, et Eric. Icon. vol. i. fasc. 10, p. 13, cum tab. col., non Lodd. *E. multicaulis*, Salisb. in Trans. Linn. Soc. vol. vi. (1802), p. 369. *E. corsica*, DC. Fl. Franç. vol. iii. p. 677, et Ic. Plant. Gall. Rar. p. 6, t. 17. *E. ramulosa*, Viv. Ann. Bot. vol. i. pars 2, p. 169, et Fl. Ital. Fragm. p. 4, t. 7, non Bartl.

It is unfortunately necessary to substitute an almost forgotten name for that under which this Heath has long been familiar. *Erica stricta*, though first published in 1796, was a *nomen nudum* till 1799, when Willdenow, taking up the name from the first edition of "Donn's Hortus Cantabrigiensis," supplied a description. Salisbury, in 1802, regarded Donn's name as inapplicable, for he says of the material which he happens to have seen, "caules undique diffusi, nequaquam stricti," and called the plant *E. multicaulis*. He had, however, in 1796, published a diagnosis of a species unmistakably identical with *E. stricta*, under the name of *E. terminalis*. A type specimen of this is preserved in the Kew Herbarium, with a label in the handwriting of Salisbury, who had crossed out "terminalis," and substituted "multicaulis," though the former was the earlier name.

E. terminalis is a native of Corsica, Sardinia, Southern

Italy and Spain. A specimen in the Kew Herbarium from the "North of Ireland, 1834, Dr. Lloyd," is referred to in the second edition of the "Cybele Hibernica" as being "either mislabelled, or gathered in a garden." It is correctly named.

This Heath was at first thought to be a Cape species, and greenhouse treatment was recommended for it. Afterwards Portugal was given as its native country. It has been in cultivation at Kew for many years, is hardy, and flowers from July to September. As *E. stricta*, it was included in the second edition of Aiton's "Hortus Kewensis," where it is stated that it was first introduced about the year 1765.

Descr.—A shrub up to five feet high. *Branches* erect, straight, more rarely diffuse, densely leafy, the younger pubescent. *Leaves* usually in fours, spreading or rarely ascending, linear-oblong, a quarter to a third of an inch long, scarcely acute, channelled on the under side, at first sparingly pubescent, afterwards glabrescent. *Flowers* four to twenty, rarely thirty to forty, in umbel-like inflorescences at the ends of the branches. *Pedicels* about a sixth of an inch long, furnished with three linear bracteoles. *Sepals* narrowly ovate-acuminate, a twelfth of an inch long. *Corolla* ellipsoid-urceolate, barely a quarter of an inch long, rose-coloured, glabrous; lobes very short, obtuse, recurved at the apex. *Anthers* included, furnished at the base with divergent, obsoletely serrulate crests. *Ovary* subglobose, densely pubescent. *Style* included or shortly exserted.—S. A. Skan.

Fig. 1, portion of branch with leaves; 2, flower; 3 and 4, anthers; 5, pistil: —*all enlarged.*

M.S. del. J.N. Fitch lith.

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Tab. 8064.

LONICERA tragophylla.

China.

Caprifoliaceæ. Tribe Lonicereæ.

Lonicera, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 5.

Lonicera tragophylla, *Hemsl. in Journ. Linn. Soc.* vol. xxiii. p. 367; *Rehder in Rep. Missouri Bot. Gard.* vol. xiv. (1903), p. 193, *et in Sargent, Trees & Shrubs,* p. 91, t. 46; *Gard. Chron.* 1904, vol. ii. p. 151, cum fig.; *L. stabianæ,* Pasquale, proxima, floribus multo majoribus et corollæ tubo intus pubescente differt.

Frutex scandens, fere undique glaber. *Caules* teretes, leves, ramulis floriferis gracilibus 6–9 poll. longis. *Folia,* paribus supremis connatis rotundatis vel deltoideis exceptis, breviter petiolata vel sessilia, papyracea, oblonga, $2\frac{1}{2}$–4 poll. longa, $\frac{3}{4}$–$1\frac{1}{3}$ poll. lata, rotundata, obtusa vel acuta, integra, supra viridia, subtus glauca et secus costam pubescentia, interdum purpureo-marginata et -costata. *Flores* 10–20 in capitula breviter pedunculata ramulos terminantia aggregati. *Calycis* dentes minuti, persistentes. *Corolla* 2–3 poll. longa, vivide aurantiaca vel lutea, labio postico extra inconspicue rubro-lineato; tubus angustus, curvatus, limbo circiter triplo longior, extra glaber, intus pubescens; limbus bilabiatus, labio postico erecto vel apice paulum reflexo breviter 4-lobato, antico anguste oblongo incurvato. *Stamina* e tubo longe exserta, glabra. *Stylus* stamina æquans vel paulum superans. *Baccæ* coccineæ, subglobosæ.

This handsome Honeysuckle, originally described from material sent to Kew by Dr. Henry, has been brought into cultivation by Messrs. James Veitch & Sons, having been sent to them from China by their collector, Mr. E. H. Wilson. It flowered for the first time in this country at the Coombe Wood Nursery in 1904. The specimen figured, which flowered in June, 1905, was supplied by Messrs. Veitch, who have informed us that the plant is quite hardy at Coombe Wood, and a very rapid grower.

Mr. Wilson found this *Lonicera* fairly common in Hupeh, climbing over bushes on mountain sides at altitudes of between 4,000 and 7,500 feet. He ascertained that it is known to the Chinese as the Ta-chin-yin-hua (Great Gold and Silver Flower). Specimens have been collected in Szechuen by Farges and Rosthorn, and in Kansu by Potanin.

Geographically it is peculiarly isolated. According to Rehder it is the only representative of the subsection

Encaprifolia in Central or Eastern Asia, and its nearest ally is the Italian *L. stabiana*, which, however, is very closely related to *L. Caprifolium*, a species extending from France to the Caucasus and Asia Minor. *L. tragophylla* is the largest-flowered species of the subgenus *Periclymenum*, and Mr. Wilson regards it as the most showy of all the Chinese species.

Descr.—A scandent, nearly glabrous shrub. *Stems* round, smooth; flowering branches slender, six to nine inches long. *Leaves* shortly stalked or sessile, papery, oblong, two and a half to four inches long, three-quarters to one and a third inches broad, rotundate, obtuse or acute, entire, glaucous below, and pubescent along the midrib; one to three of the uppermost pairs connate, rounded or deltoid. *Flowers* ten to twenty, in shortly stalked heads terminating the branches. *Calyx*-teeth minute, persistent. *Corolla* bright orange-coloured or yellow, faintly streaked with red on the back of the upper lip, two to three inches long; tube slender, curved, about three times as long as the limb, glabrous outside, pubescent inside. *Limb* two-lipped; upper lip erect or somewhat reflexed at the apex, shortly four-lobed; lower lip narrowly oblong, incurved. *Stamens* exserted, glabrous. *Style* as long as or slightly longer than the stamens, glabrous. *Berries* scarlet, subglobose.—S. A. Skan.

Fig. 1, young fruits, showing calyx-teeth and style; 2, corolla laid open:—*enlarged.*

M.S.del, J.N.Fitch lith.

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Tab. 8065.

POLYGALA apopetala.

Lower California.

Polygalaceæ.

Polygala, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 136; *Chodat, Monographia Polygalacearum*, pars ii.

Polygala (§ Hebeclada) **apopetala**, *T. S. Brandegee in Proc. Calif. Acad. Sci.*, ser. 2, vol. ii. p. 130; *and in Zoe*, vol. i. p. 4; *Chodat in Engl. & Prantl, Pflanzenfam.* vol. iii. pars 4, p. 332; *Bailey, Cycl. Amer. Hortic.* p. 1391; ab affini *P. floribunda*, Benth., arillo multo minore, ovario subsessili recedit.

Frutex vel arbuscula, 2–15 ped. alta, ramis rectis gracilibus minute appresse cinereo-pubescentibus. *Folia* satis remota, alterna, lanceolata, obtusa, minute apiculata, in petiolum 1–2 lin. longum attenuata, 1½–3 poll. longa, 5–14 lin. lata, integra, glabrescentia, venis venulisque inconspicuis. *Racemi* usque ad 8 poll. longi, bracteis subulatis caducissimis, pedicellis gracilibus 4–6 lin. longis. *Sepala* exteriora 3, cymbiformia, 2 lin. longa, dense albo-ciliata, quorum 2 antica fere ad apicem in unum connata; alæ petaloideæ, suborbiculares, 6 lin. diametro, minute ciliatæ. *Petala* postica ligularia, 5 lin. longa, extrorse revoluta, ut lateralia et carina, basi cum tubo staminali connata; lateralia ovata, obtusiuscula, vix ½ lin. longa; carina unguiculata, late cymbiformis, ecristata, exappendiculata, 6 lin. longa. *Stamina* 8, tubo filamentorum ad margines posticos ciliato, partibus liberis glabris; antheræ oblongæ, ¾ lin. longæ. *Ovarium* glabrum, subsessile, basi disco circumdatum, stylo apice recurvo, triente superiore postice barbato, stigmate terminali. *Capsula* elliptica, latior quam longa. *Semina* ovoidea, paullo compressa, pubescentia, arillo minuto, vix lobato.

P. apopetala is the only species of *Polygala* that is known to attain the dimensions of a tree. It was first discovered in 1889 at Comundu, Lower California, by Mr. T. S. Brandegee, who describes the locality as follows:—"Comundu is a settlement nine miles in length, along a little brook in a narrow cañon, three to five hundred feet high, with its steep slopes crested by a line of perpendicular cliffs. It was at the base of these cliffs that the interesting *Lopezia clavata* and *Polygala apopetala* were found." In the following year Mr. Brandegee found that *P. apopetala* was "abundant in the Sierra de Laguna, a range of mountains near Todos Santos in Lower California, that reach an altitude of nearly 5,000 feet. In the cañons at the base of the range this handsome species acquires its greatest development, and becomes a small tree, having a trunk and spreading top, and equalling in height the

surrounding Acacias and Lysilomas. The finest example seen was fifteen feet high or more, with the ends of the branches terminated by racemes of flowers in full bloom. . . . . It is found growing as a bush about the high altitudes of the mountains, and during my visit withstood slight frosts, proving that it is somewhat hardy, and would grow in a more northern climate, and perhaps be capable of becoming an ornament to the gardens of San Francisco."

Our plate was prepared from specimens communicated by Sir Thomas Hanbury, K.C.V.O., La Mortola, Ventimiglia, in July, 1905. At La Mortola, *P. apopetala* is a shrub, three to five feet in height.

Descr.—A shrub or small tree, two to fifteen feet high. *Branches* straight, slender, minutely appressed-pubescent. *Leaves* alternate, lanceolate, obtuse, minutely apiculate, attenuate into the petiole, one and a half to three inches long, half to one and a quarter inches broad, entire, glabrescent; veins inconspicuous. *Racemes* eight inches long or less; bracts subulate, very caducous; pedicels slender, one-third to half an inch long. *Outer sepals* three, the two anticous ones connate nearly to the apex, boat-shaped, a sixth of an inch long, densely ciliate; wings petaloid, suborbicular, half an inch in diameter, minutely ciliate. *Petals* adnate to the staminal tube at the base, the posticous ones strap-shaped, nearly half an inch long, revolute; lateral petals ovate, obtuse, scarcely a twenty-fourth of an inch long; keel clawed, broadly boat-shaped, half an inch long, not crested nor appendaged. *Staminal tube* ciliate on the posticous margins, the free part of the filaments glabrous; anthers oblong. *Ovary* glabrous, subsessile; style recurved at the apex, the upper third bearded on the inner side; stigma terminal. *Capsule* elliptic, broader than long. *Seeds* ovoid, slightly flattened, pubescent; aril minute, scarcely lobed. —T. A. Sprague.

Fig. 1, flower with the two lateral sepals removed; 2, staminal tube; 3 and 4, anthers, before and after dehiscence; 5, pistil:—*all enlarged.*

M.S. del. J.N.Fitch lith

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Tab. 8066.

CEROPEGIA FUSCA.

Grand Canary.

ASCLEPIADACEÆ.

CEROPEGIA, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 779.

Ceropegia fusca, *C. Bolle in Bonplandia*, vol. ix. (1861), p. 51; affinis *C. dichotomæ*, a qua caulibus crassioribus albidis et floribus rubro-brunneis differt.

Planta succulenta, e basi ramosa, subaphylla. *Caules* vel rami 1½–6 ped. longi, 6–9 lin. crassi, cylindrici, articulati, glabri, albidi. *Folia* paucissima, ¾–1½ poll. longa, 1–2 lin. lata, lineari-lanceolata, acuminata. *Flores* ad nodos fasciculati, erecti, breviter pedicellati. *Sepala* 1 lin. longa, deltoideo-attenuata, glabra. *Corolla* 1⅓ poll. longa, extra glabra, rubro-brunnea; tubus 10–11 lin. longus, inferne leviter inflatus, superne infundibularis, intra parce hirtus, albidus; lobi 7 lin. longi, e basi deltoideo-lanceolata 2½ lin. lata lineari-attenuati, apice connati vel demum liberi. *Corona* lutea, glabra: lobi exteriores ½ lin. longi, breviter bifidi, lobis interioribus adnati; lobi interiores 1 lin. longi, filiformes, erecti, conniventes. *Folliculi* 6–6½ poll. longi, ¼ poll. crassi, erecti, teretes, superne attenuati, obtusi, glabri, olivacei, fusco-punctati.

The odd-looking plant here figured bears so little resemblance, in its stems and habit, to the majority of the species of *Ceropegia*, that when out of flower it might easily be mistaken for a *Euphorbia*. The only other species of *Ceropegia* with which it can be compared is the nearly allied *C. dichotoma*, which is also a native of the Canaries, and *C. stapelioides*, a native of South Africa, both of which have long been in cultivation.

C. fusca is a native of Grand Canary, where it was originally discovered by Carl Bolle about the year 1860. Since that time it does not appear to have been collected, and nothing more was known of it until 1904, when Mr. Walter Ledger, of Wimbledon, who is much interested in this genus, was instrumental in its rediscovery. He furnished Mr. Alaricus Delmard, a botanist resident in the Canary Islands, with its recorded habitat, and that gentleman soon succeeded in finding this interesting species, and early in 1905 sent the living plant, here figured, to Kew, where it flowered in June. Mr. Ledger writes that, according to Mr. Delmard, the goats have nearly exterminated the plant in its native locality. It

grows in a dry district, and requires similar treatment to that given to *C. stapeliæformis*.

Descr.—A bushy succulent, with many stems from the base, almost leafless. *Stems* erect, and about a foot and a half high, but according to Mr. Delmard sometimes six feet, simple or repeatedly forked, half to three-quarters of an inch thick, jointed, cylindric, glabrous, whitish. *Leaves* very few, only occasionally developed, three-quarters to one inch and a half long, linear-lanceolate, acuminate, dark green. *Flowers* in fascicles at the nodes, produced for two or more years in succession, erect. *Bracts* minute, deltoid-ovate, acute, glabrous. *Pedicels* a sixth of an inch long, glabrous. *Sepals* very small, acute, glabrous. *Corolla* about an inch and a third long, dull reddish-brown, glabrous outside; lobes and mouth of the tube glabrous within, with a faint purple bloom; tube thinly hairy inside, and white or very pale yellowish, nearly an inch long, a sixth of an inch in diameter at the swollen base, slightly bent and cylindric above, widening into a funnel-shaped mouth; lobes above half an inch long, deltoid-lanceolate, tapering into slender, linear tails, at first connate at the tips, sometimes more or less free and spreading. *Corona* light yellow; outer lobes very short, adnate to the base of the inner lobes, subquadrate, shortly bifid, glabrous, inner lobes twice as long, filiform, connivent at the base over the anthers and style-apex, glabrous. *Follicles* about six inches long, a quarter of an inch thick, terete, tapering from about the middle to a blunt point, glabrous, light olive-green, speckled with brown.—N. E. Brown.

Fig. 1, apex of a young stem with leaves, from Mr. Delmard's drawing; 2, flower-bud; 3, corona; 4, corona with one lobe removed and the side ones pushed back a little to show the anthers, which are opposite the corona-lobes; 5, pollen-masses:—figs. 2–5, *enlarged*.

Erratum.

Tab. 8058. In lines 23 and 28 of description, for *F. scardica* read *S. scardica*.

1

4

3

2

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Tab. 8067.

NEPENTHES Phyllamphora.

Eastern Tropical Asia and Western Polynesia.

Nepenthaceæ.

Nepenthes, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 115.

Nepenthes Phyllamphora, *Willd. Sp. Pl.* vol. iv. pars 2, p. 874; *Korthals in Verh. Nat. Gesch.* p. 28, t. 15; *Hook f. in DC. Prodr.* vol. xvii. p. 97; non *N. Phyllamphora, Bot. Mag.* t. 2629, nec 2798, quæ est *N. khasyana, Hook. f.* loc. cit. p. 102; ab omnibus speciebus mihi cognitis foliis margine ciliolatis vel minute denticulatis recedit.

Suffrutex robustus, paucipedalis, novellis puberulis. *Folia* demum coriacea, cum petiolo 6–18 poll. longa, et usque ad $3\frac{1}{2}$ poll. lata, oblonga vel lanceolata, utrinque attenuata, rarius rotundata, margine ciliata, ciliis nonnumquam evanidis; cirrhus gracilis. *Ascidia*, 3–7 poll. longa, subcylindrica, infra medium leviter ventricosa, extus viridia vel rubroviridia, intus a basi usque ad medium, vel interdum ultra, glandulis minutis fere innumerabilibus obsita, supra medium nuda, lubrica, viridia vel violacea; costæ duæ anticæ alatæ vel apteræ, fimbriatæ vel integræ; costa postica apice juxta operculum in calcar breve debile integrum vel bifidum producta. *Operculum* fere orbiculare, intus glandulis melliferis orbicularibus vel oblongis marginatis crebre conspersum. *Peristomium* angustum, margine interiore pectinatum, dentibus minutis numerosissimis, inter dentes uniporosum uniglandulosum. *Flores* utriusque sexus laxe racemosi, racemis erectis longe pedunculatis folia excedentibus. *Perianthium* 4-partitum, segmentis extus tomentosis intus glandulosis. *Capsula* cana.—*Phyllamphora mirabilis*, Lour. Fl. Cochinch. p. 606. *Cantharifera*, Rumph. Herb. Amb. vol. v. p. 121, t. 59. *N. macrostachya* et *N. fimbriata*, Blume, Mus. Bot. Lugd. Bat. vol. ii. p. 7; Miq. Ill. Fl. Arch. Ind. pp. 3 et 5, tt. 2 et 6. *N. kennedyana*, F. Muell. Fragm. vol. v. p. 154; Benth. Fl. Austral. vol. vi. p. 40 (*Kennedyi*); Bailey, Queensland Flora, part 4, p. 1278, t. 46; Beccari, Malesia, vol. iii. p. 11. *N. distillatoria*, Ait. Hort. Kew. ed. 2, vol. v. p. 420; Hemsl. The Garden, vol. lxvii. p. 269.

I have followed Sir Joseph Hooker in the synonymy of this *Nepenthes*, as far as he goes, and Beccari as to including *N. kennedyana*; but I am not quite satisfied that some of the specimens, including *N. macrostachya*, Bl., are correctly referred here. Miquel states that *N. macrostachya* is very different, though he fails to give the distinctions, except that the pedicels are more than one-flowered. The same author claims that *N. fimbriata*, Bl., differs from *N. Phyllamphora* in having ciliated leaves. Beccari makes two species, including *N. fimbriata* under *N. macrostachya*, and *N. kennedyana* under *N. Phyllamphora*; but he had seen no specimens either from China or Cochin China. In most of the Chinese specimens the pedicels are

free from each other; occasionally two are connate, so this character is not absolute.

Whatever view we take of the limits of the species, that figured appears to be the one described by Loureiro, and must therefore bear the name *Phyllamphora*. It is the only one known from South China and the country immediately to the south; and it is the species that was first cultivated at Kew, having been introduced, according to Aiton, by Sir Joseph Banks in 1789. There is an undated specimen at Kew from the Herbarium of Bishop Goodenough, labelled: "*Nepenthes distillatoria*, Kew;" and it is recorded by Aiton under this name, and as a native of China and Ceylon. There was further confusion in the names of the species cultivated during the first half of the last century, and it may be worth while repeating the corrected synonymy here:—*N. distillatoria*, Ait. = *N. Phyllamphora*, Willd.; *N. distillatoria*, Loddiges Bot. Cab. vol. xi. 1825, t. 1017 = *N. khasyana*, Hook. f.; *N. Phyllamphora*, Bot. Mag. t. 2629 = *N. khasyana*; *N. distillatoria*, Bot. Mag. t. 2798 = *N. khasyana*. Loddiges' figure was the first of a cultivated *Nepenthes* in this country, and the accompanying plate is the first of the true *N. Phyllamphora*.

As limited by Sir Joseph Hooker, it has the widest range of any species of the genus, ranging from Mount Ophir, in Malacca, South China, the Philippines, and Pelew Island, through the Malay Archipelago to New Guinea, the Louisiade Archipelago and North-eastern Australia It differs apparently from most other species in not having two kinds of pitchers. In all the numerous specimens examined, both wild and cultivated, the pitchers have a wide conductive or glandless zone; there are no pitchers in which the whole interior is covered with secreting glands. There are, however, considerable differences in the size and colouring; the female plant having them more highly coloured than the male. *N. Phyllamphora* is also remarkable for the smallness and number of its digestive glands. My colleague, Mr. Cotton, and I, have carefully counted the number in a square line, several times over, and we make it from ninety to a hundred, which gives the enormous total of 13,000 to 14,400 glands to the square inch!

The accompanying illustration was made from a plant sent to Kew by Mr. C. Ford, I.S.O., from the Hong Kong Botanic Garden, in 1894, with the information that it was obtained from the Island of Hainan.

The plants cultivated at Kew, under the name of *N. obrieniana*, are not specifically distinguishable from *N. Phyllamphora*, but it is also true that they do not resemble the highly-coloured figure of the original in the "Illustration Horticole," vol. xxxvii. p. 109, t. 116.

Descr.—A vigorous species. *Stems* stout, hairy when young. *Leaves* becoming leathery, oblong or lanceolate, including stalk six to eighteen inches long, and as much as three or four inches broad, ciliate on the margin when young. *Pitchers* three to seven inches long, nearly cylindrical, slightly inflated below the middle, green, or green and red outside, glandular inside up to the middle, or higher, the smooth zone usually coloured and glaucous, sometimes green; anterior ribs winged or wingless; wings entire or fringed; posterior rib produced at the top into a soft spur. *Lid* densely glandular inside. *Collar* very finely pectinate; teeth about eighty to the inch, alternating with deeply seated honey glands.—W. Botting Hemsley.

Fig. 1, portion of margin of a leaf; 2, portion of under surface of operculum; 3, a female flower; 4, portion of upper surface of a perianth-segment:—*all enlarged.*

M. S. del J.N Fitch lith.

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Tab. 8068.

GLADIOLUS carmineus.

South Africa.

Iridaceæ. Tribe Ixieæ.

Gladiolus, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 709; *Baker, Handb. Irideæ*, p. 198.

Gladiolus carmineus, *C. H. Wright*; ex affinitate *G. ramosi*, Paxt., sed spathis longioribus antherisque luteis differt.

Caulis erectus, circa 1½ ped. altus, gracilis, basi vaginis ad 2½ poll. longis vestitus. *Folia* linearia, acuminata, post anthesin ad 8 poll. longa et 4 lin. lata, glabra, costa crassa. *Spatha* exterior elliptica, acuminata, 2 poll. longa, interior similis, sed 1½ poll. longa. *Flores* circa 3 poll. diam.; perianthii tubus anguste infundibuliformis, apice 6 lin. diam., extus pallidus; lobi ovati, acuminati, 9 lin. lati, carminei, duo interiores basi macula pallidiore sanguineo-marginata instructi. *Antheræ* oblongæ, curvatæ, dilute luteæ. *Styli* rami 3 lin. longi, lineares.

The affinity of this species is with *G. hirsutus*, Jacq., a native of Cape Colony, of which the variety *roseus* has been figured in this Magazine, t. 574. That species differs, however, in having the stem and leaves hairy and the perianth-tube more curved. Bulbs of the present plant were received at Kew in 1903 from Hon. Sir C. Abercrombie Smith, Controller and Auditor General, Cape of Good Hope, who found it "at Hermanus, a small village on the Southern Coast of South Africa, on the sandstone cliffs from 40 to 80 feet high which skirt the sea." Flowers were produced at Kew in September last. At first sight this plant recalls some of the forms of *G. ramosus*, Paxt., which is a hybrid between *G. cardinalis*, Curt. (B. M. t. 135) and *G. oppositiflorus*, Herb., but differs in its much more lax habit, in addition to the characters mentioned in the diagnosis above. In the almost regular form of the perianth it also approaches *G. blandus*, Soland. (B. M. t. 1665), which, like *G. ramosus*, has blue anthers, and sometimes is blotched on two (not three) of the perianth-lobes. The tropical African *G. corneus*, Oliv., has the perianth-tube curved in the upper part, but otherwise resembles *G. carmineus*.

Descr.—*Stem* erect, slender, about a foot and a half high, clothed at the base with several sheaths, the longest

being about two and a half inches. *Leaves* produced later, linear, acuminate, eight inches long, and a third of an inch wide, glabrous, midrib thick. *Spathes* elliptic, acuminate, the outer two inches long, the inner an inch and a half long, herbaceous. *Flowers* about three inches across; perianth-tube narrowly funnel-shaped, half an inch in diameter, almost white outside; lobes ovate, acuminate, three-quarters of an inch wide, carmine, two of the inner with a paler spot at the base surrounded by a darker border. *Stamens* reaching rather more than half way up the perianth-lobes; anthers oblong, pale yellow. *Style-branches* a fourth of an inch long, linear.—C. H. Wright.

Figs. 1 and 2, anthers; 3, style-branches:—*all enlarged.*

M.S. del. J.N. Fitch lith

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Tab. 8069.

LIGUSTRUM STRONGYLOPHYLLUM.

China.

Oleaceæ. Tribe Oleineæ.

Ligustrum, *Tourn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 679.

Ligustrum strongylophyllum, *Hemsl. in Journ. Linn. Soc.* vol. xxvi. p. 93; species foliis parvis sæpe orbicularibus coriaceis crassiusculis distincta.

Frutex vel arbor parva sempervirens, diffuse ramosa. *Ramuli* juniores graciles, dense minuteque puberuli. *Folia* breviter petiolata, coriacea, crassiuscula, fere glaberrima, orbicularia, elliptica, late ovata vel obovata, 6–12 lin. longa, 4–8 lin. lata, integerrima, supra nitida et saturate viridia, subtus pallidiora, rotundata, obtusa vel acuta, sæpe minute mucronata, marginibus paulum revolutis. *Flores* breviter pedicellati in paniculas terminales usque ad $3\frac{1}{2}$ poll. longas basi 3 poll. latas dispositi. *Calyx* cupularis, sæpius inconspicue 5-dentatus, $\frac{1}{2}$–$\frac{3}{4}$ lin. longus, glaber. *Corollæ* albæ tubus infundibularis, 1–2 lin. longus; lobi ovato-oblongi, crassi, subacuti, tubo paulum breviores. *Stylus* e corollæ tubo brevissime exsertus. *Fructus* primum globosus, maturitate obovoideus, circiter 4 lin. longus.

The specimen of the *Ligustrum* here figured was furnished by a plant which was purchased from Messrs. James Veitch & Sons in 1897, and which flowered for the first time in July, 1905. Though quite hardy at Kew, it appears to succeed best when afforded some slight protection. A plant is growing freely trained on a wall in the Herbaceous Department, and has now reached a height of about six feet, but so far it has by no means proved floriferous.

The species is one of Dr. Henry's discoveries. Specimens were also collected for Messrs. Veitch by Mr. E. H. Wilson, who informs us that the plant grows on the cliffs of the glens and gorges of the Yangtse, west of Ichang, in the province of Hupeh, and extends westward as far as Mount Omi, in Szechuen. In the Tung Valley, still further west, it is replaced by another small-leaved species, *L. Prattii*, Kœhne. *L. strongylophyllum* was found growing, in company with *Lagerstræmia indica* and *Gardenia florida*, plants which require greenhouse treatment in our climate.

Three Privets have hitherto been illustrated in this work:—*L. lucidum*, Ait. (t. 2565), *L. nepalense*, Wall. *β*

glabrum, Hook. (t. 2921), and *L. coriaceum*, Carr. (t 7519). The first is especially interesting, on account of its being one of the two plants on which the Insect white wax of the Chinese is deposited. *Fraxinus sinensis* is the other. See *Kew Bulletin*, 1893, p. 85.

Descr.—An evergreen, diffusely branched shrub, or small tree. *Branchlets* slender, densely and minutely puberulous. *Leaves* shortly petiolate, thick, coriaceous, almost quite glabrous, orbicular, elliptic, broadly ovate or obovate, a half to one inch long, a quarter to two-thirds of an inch broad, entire, shining and dark green above, paler beneath, rounded, obtuse, or acute, often minutely mucronate, somewhat revolute on the margins. *Flowers* shortly pedicellate, arranged in terminal panicles, the largest about three inches and a half long and three inches broad at the base. *Calyx* very small, cup-shaped, often obscurely 5-toothed, glabrous. *Corolla* white; tube funnel-shaped, one-twelfth to one-sixth of an inch long; lobes ovate-oblong, thick, subacute, slightly shorter than the tube. *Style* very shortly exserted. *Fruit* at first globose, obovoid when mature, about one-third of an inch long.—S. A. Skan.

Fig. 1, portion of branch; 2, flower; 3, vertical section of calyx showing ovary and style; 4 and 5, anthers:—*all much enlarged.*

2

3

1

M.S. del. J.N. Fitch lith.

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Tab. 8070.

CYPRIPEDIUM TIBETICUM.

Eastern Tibet and Western China.

ORCHIDACEÆ. Tribe CYPRIPEDIEÆ.

CYPRIPEDIUM. *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 634, ex parte; *Pfitzer in Engl. & Prantl. Pflanzenf.* vol. ii. 6, p. 82.

Cypripedium tibeticum, *King ex Rolfe in Journ. Linn. Soc.* vol. xxix. p. 320; vol. xxxvi. p. 66; *Franch. in Journ. de Bot.* 1894, p. 250; *King & Pantling in Ann. R. Bot. Gard. Calc.* vol. viii. p. 341, t. 447; *Rolfe in Orch. Rev.* 1905, p. 194; aff. *C. macrantho*, Swartz, sed segmentis reticulato-venosis, et staminodio late cordato-ovato nec trulliformi differt.

Herba terrestris, $\frac{1}{2}$–$1\frac{1}{4}$ ped. alta. *Caules* erecti, pubescentes, 3–4-phylli, basi vaginis 2 vel 3 inæqualibus obtecti, apice uniflori. *Folia* ovata vel ovato-oblonga, acuta vel subobtusa, membranacea, plicata, puberula et ciliata, subsessilia, 2–5 poll. longa, $\frac{3}{4}$–$2\frac{3}{4}$ poll. lata. *Bracteæ* ovatæ, acutæ vel acuminatæ, concavæ, foliaceæ, $1\frac{1}{2}$–3 poll. longæ. *Flores* magni, rubro-purpureo-striati et reticulati, labello et staminodio atro-purpureo suffusis. *Sepalum* posticum late ovatum, acutum, concavum, $1\frac{1}{4}$–$1\frac{3}{4}$ poll. longum; sepala lateralia connata, quam posticum minora. *Petala* elliptica vel ovato-lanceolata, acuminata, $1\frac{1}{2}$–2 poll. longa. *Labellum* ventricosum, globosum, $1\frac{1}{4}$–2 poll. longum, ore semicirculari. *Columna* $\frac{3}{4}$ poll. longa; staminodium late ovatum. obtusum, convexum, 6–7 lin. longum.—*C. macranthon* var. *ventricosum*, Hook. f. Fl. Brit. Ind. vol. vi. p. 170, non Carrière.

This handsome *Cypripedium* was discovered as long ago as 1879, at Pitzala, in the province of Chumbi, by a native collector of Sir George King, when it received the manuscript name now adopted. It was, however, not published, and for about thirteen years the plant was regarded as a form of the Siberian *C. macranthon*, Swartz, before its differential characters were pointed out. At this time it was shown that a Himalayan species had also been included under *C. macranthon*, to which the name *C. himalaicum*, Rolfe, was given. Both were subsequently collected by Pantling, Pratt, and Wilson, while one or the other has also been obtained by other collectors. The first-named was successfully introduced to cultivation by Mr. E. H. Wilson, Collector for Messrs. James Veitch & Sons, who brought home plants from Tachienlu, in Western Szechuen, near the Tibetan border. These arrived in April, 1905, and flowered with the importers in the following June, when the accompanying plate was prepared. Mr. Wilson remarks that the species is very common on the mountains

around Tachienlu, at elevations between 10,000 and 12,000 feet, and that the flowers are usually very much darker in a wild state than here shown.

Notwithstanding the evident distinctness of this species from *C. macranthon*, Swartz (B. M. t. 2938), it is not easy to put the distinction into words, beyond the very obvious difference in colour and the shape of the staminode, but the lip of *C. macranthon* is corrugated round the mouth. Mr. Wilson, who has collected both species and seen them growing in enormous quantities, states that they are very distinct, both geographically, and in their morphological characters. The difficulty is that some of these characters become obliterated in the process of drying for the Herbarium.

The species will doubtless succeed under similar cultural treatment to that given to *C. macranthon*.

Descr.—A terrestrial herb from about half to a foot and a quarter high. *Stems* erect, pubescent, bearing three to four leaves, and at the base two or three reduced more or less tubular sheaths. *Leaves* ovate or ovate-oblong, acute or subobtuse, membranaceous, plicate, puberulous, and ciliate, subsessile, two to five inches long, three-quarters to two and three-quarter inches broad. *Bracts* ovate, acute, or acuminate, concave, more or less leaf-like, an inch and a half to three inches long. *Flowers* solitary, terminal, nearly four inches across, striped and reticulated with reddish purple on a paler ground, staminode and front of lip suffused with dark purple. *Dorsal* sepal broadly ovate, acute, concave, one and a quarter to one and three-quarter inches long; lower sepal rather smaller. *Petals* elliptical or ovate-lanceolate, acuminate, an inch and a half to two inches long. *Lip* ventricose, globose, an inch and a quarter to two inches long; mouth semi-circular. *Column* three-quarters of an inch long; staminode broadly ovate, obtuse, convex, about half an inch long.—R. A. Rolfe.

Fig. 1, vertical section of lip; 2 and 3, column seen from the front and side, showing the staminode, stamens and stigma :—2, *natural size, the rest magnified.*

M. S. del. J N Fitch Lith

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Tab. 8071.

CALLOPSIS Volkensii.

German East Africa.

Aroideæ.—Tribe Zomicarpeæ?

Callopsis, *Engler in Notizblatt Königl. Bot. Gart. Berlin*, vol. i. p. 27.

Callopsis Volkensii, *Engler loc. cit. et in Pflanzenw. Ost-Afr.* vol. C. p. 131; *N. E. Brown in Dyer, Flora of Tropical Africa*, vol. viii. p. 186; **species unica.**

Herba acaulis glabra. *Foliorum* petiolus $1\frac{1}{2}$–**5** poll. longus, supra canaliculatus; lamina $3\frac{1}{4}$–$5\frac{1}{4}$ poll. longa, 2–$3\frac{1}{4}$ poll. lata, elongato-ovata vel oblongo-ovata, obtusa, apiculata, basi cordata. *Pedunculi* 3–$3\frac{1}{2}$ poll. longi, erecti. *Spatha* e basi expansa, 1–$1\frac{1}{3}$ poll. longa, $\frac{3}{4}$–1 poll. lata, elliptica, apiculata, alba. *Spadix* quam spatha brevior, lutea parte feminea spathæ adnata. *Flores* unisexuales, nudi: feminei 3–12, subbiseriati; ovarium oblique conoideum vel anguste elongato-ovoideum in stylum brevem attenuatum, uniloculare, uniovulatum; stigma parvum: ovulum subbasilare, anatropum, erectum: masculi in spicam cylindricam obtusam dense conferti; antheræ sessiles, subquadratæ.

The interesting plant here figured was discovered by Dr. Volkens growing at the foot of trees in the forest on Mount Msasa, between Nderema and the River Sigi in German East Africa. It was first introduced into the Royal Botanic Gardens at Dahlem, near Berlin, whence a plant was received at Kew in 1905, and it commenced to flower in September, and continued for over three months. Probably it will prove of considerable value from a horticultural point of view, on account of the persistence of its pure white spathes, which are freely produced, and contrast well with the dark green foliage. It requires stove treatment, similar to that given to the various species of *Schismatoglottis*.

Dr. Engler places *Callopsis* in the tribe *Pothoideæ*, but as its floral structure is very similar to that of *Zomicarpella*, except the inappendiculate spadix, I think it would be placed better next in the same tribe, or as a distinct monotypic tribe of its own, based on its non-tuberous habit and absence of an appendix. In the totality of its characters it is intermediate between the tribes *Zomicarpeæ* and *Philodendreæ*.

Descr.—A stemless perennial herb, with a short branch-

ing underground rootstock, quite glabrous in all parts. *Leaves* several to a shoot; petiole one and a half to five inches long, channelled down the face; blade spreading about three to five inches long, two to three inches broad, elongated, ovate, or oblong-ovate, obtusely pointed, apiculate, cordate at the base, bright dark green, paler beneath; basal lobes about three-quarters of an inch long, rounded. *Peduncles* between three and four inches long, erect. *Spathe* about an inch long, three-quarters to one inch broad, open to the base, but with the sides approximate below, elliptic, obtuse, apiculate, more or less decurrent on the peduncle, pure white. *Spadix* much shorter than the spathe, monœcious, yellow; female part adnate to the spathe, unilateral; male part shortly separated from the female, terete, obtuse. *Flowers* without a perianth. *Ovaries* 3–12, in about two series, obliquely conoid, or narrowly elongated, ovoid, tapering into a short, thick style, one-celled, with a solitary subbasal ovule; stigma small, discoid. *Anthers* sessile, quadrate, densely crowded. —N. E. Brown.

Fig. 1, spadix and part of the spathe; 2, anther; 3, ovary; 4, longitudinal section of the same; 5, ovule:—*all enlarged*.

M.S. del. et Lith.

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Tab. 8072.

Lilium Duchartrei.

Western and Central China.

Liliaceæ. Tribe Tulipeæ.

Lilium *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 816.

Lilium Duchartrei, *Franch. in Nouv. Arch. Mus. Par.* 2me sér. vol. x. p. 90, *et in Journ. de Bot.* vol. vi. (1892), p. 316; *C. H. Wright in Journ. Linn. Soc.* vol. xxxvi. p. 130; *L. Leichtlinii*, Hook. f., affine, quod perianthio luteo purpureo-maculato segmentis basi carinato-cristatis recedit.

Herba tripedalis. *Bulbi* parvi, ovoidei; squamæ lanceolatæ, acuminatæ, ciliatæ. *Caulis* teres, glaber, rubro-striatus, apice 1–7-florus. *Folia* alterna, lanceolata vel lineari-lanceolata, acuminata, basi attenuata, $2\frac{1}{2}$ poll. longa, 6 lin. lata, trinervia, subtus glauca. *Flores* subcernui, circa 3 poll. diam., albi, extus roseo-tincti, intus roseo-maculati; perianthium basi breviter campanulatum; segmenta oblonga, recurva, exteriora acuta, interiora obtusa, intus basi lineis papillosis instructa. *Stamina* æqualiter divergentia, perianthio breviora; filamenta alba; antheræ luteæ. *Stylus* staminibus æquilongus; stigma capitatum.

Thirty-two lilies are now recorded from China. Of these, seventeen are confined to that country, while five extend into India, seven into Japan and three into Northern Asia. The present species was discovered in June, 1869, by the late Abbé Armand David during his journey in the district of Moupine; since then it has been found in other parts of Szechuen, in Kansuh and in Yunnan. Our plant was raised from bulbs collected in moist meadows at an altitude of from 8,000 to 9,500 ft. at Tachienlu, in Szechuen, by Mr. E. H. Wilson for Messrs. Veitch & Sons, of Chelsea. It flowered at Kew in July last, and seems to thrive under cultivation, as in a wild state it rarely produces more than three flowers on one stem.

L. polyphyllum, D. Don, figured in Elwes's Monograph of the Genus *Lilium*, tab. 48, resembles *L. Duchartrei* in habit, but the perianth has a long tubular base, and is greenish outside.

Descr.—A herb about three feet high. *Bulbs* small, ovoid; scales lanceolate, acuminate, ciliate. *Stem* terete, glabrous, striped with reddish-purple, one- to seven-flowered. *Leaves* alternate in the upper part of the stem, lanceolate or linear-lanceolate, acuminate, tapering towards

the base, two inches and a half long, half an inch wide, three-nerved, glaucous beneath. *Flowers* nodding, about three inches across, white, tinged with rose outside, and finely spotted with rose inside, except towards the tips of the segments; perianth shortly campanulate at the base; segments oblong, recurved, the outer acute, the inner obtuse, bearing lines of papillæ near the base. *Stamens* equally spreading, rather shorter than the perianth; filaments white; anthers yellow. *Style* as long as the stamens; stigma capitate.—C. H. WRIGHT.

Figs. 1 and 2, anthers; 3, pistil:—*all enlarged*.

M.S. del. J.N. Fitch lith.

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Tab. 8073.

PRIMULA cockburniana.

China.

Primulaceæ.—Tribe Primuleæ.

Primula, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 631.

Primula cockburniana, *Hemsl. in Journ. Linn. Soc.* vol. xxix. p. 313; *Gard. Chron.* 1905, vol. i. pp. 331 *et* 345, fig. 137; *Pax. et Knuth in Engl. Pflanzenr., Primulaceæ,* p. 126; species floribus saturate aurantiaco-rubris in verticillos superpositos dispositis distinctissima.

Herba perennis, præter inflorescentiam plus minusve farinosam fere omnino glabrescens. *Folia* sæpe longe petiolata, membranacea, anguste obovato-oblonga, petiolo incluso 2–5 poll. longa, supra medium ¾–1¼ poll. lata, obscure lobulata, minute denticulata, apice rotundata, deorsum sensim attenuata, præsertim subtus paulum pulverulenta. *Scapus* gracilis, erectus, 4–12 poll. altus, floribus in verticillos 2–4 superpositos dispositis; verticilli 2–7-flori. *Bracteæ* lineari-triangulares, 1–1½ lin. longæ. *Pedicelli* ascendentes, 6–9 lin. longi. *Calyx* anguste campanulatus, circiter 2 lin. longus; lobi ovato-deltoidei, vix 1 lin. longi, erecti, acuti, intus dense farinosi. *Corolla* saturate aurantiaco-rubra, glabra; tubus cylindricus, apice paulum ampliatus, vix ½ poll. longus; limbus patens, 6–7 lin. diam., lobis obovatis apice cordatis vel retusis. *Capsula* oblonga, 3 lin. longa, 1½ lin. lata.

This *Primula* lacks the vigour of constitution and large size of flower of some of the allied species previously brought into cultivation, but the remarkable colour of the corolla gives it a unique position in the large and deservedy popular genus to which it belongs.

For the opportunity of figuring it we are indebted to Messrs. James Veitch & Sons, who supplied a plant which flowered with them in the open air in June, 1905. It is one of their numerous introductions from China, whence seeds and dried specimens were sent by their collector, Mr. E. H. Wilson, who met with it in moist or marshy alpine meadows at elevations of from 9,000 to 11,000 feet, to the immediate west of Tachienlu, West Szechuen. It was very abundant in this locality, but Mr. Wilson did not see it elsewhere.

P. cockburniana is included by Pax and Knuth in the section *Cankrienia*, which comprises species possessing, amongst others, the following characters:—Plant without stolons. Leaves membranous or papery, not, or scarcely distinctly lobed, toothed. Calyx not accrescent. Flowers

pedicellate, in superposed verticils. Other species of this section already figured in the Botanical Magazine are: *P. japonica* (t. 5916), *P. prolifera* (t. 6732), *P. Poissoni* (t. 7216), and *P. imperialis* (t. 7217).

Descr.—A perennial herb, almost glabrescent, except the more or less farinose inflorescence. *Leaves* often long-petioled, membranous, narrowly obovate-oblong, two to five inches long, including the petiole, three-quarters to one inch and a quarter wide above the middle, obscurely lobed, minutely toothed, rounded at the apex, gradually narrowed towards the base, somewhat pulverulent, especially on the underside. *Scape* slender, erect, four to twelve inches high, with the flowers in two to four superposed verticils, each two- to seven-flowered. *Bracts* linear-triangular, a twelfth to an eighth of an inch long. *Pedicels* ascending, half to three-quarters of an inch long. *Calyx* narrowly campanulate, about a sixth of an inch long; lobes ovate-deltoid, scarcely a twelfth of an inch long, erect, acute, densely farinose inside. *Corolla* a rich orange-red, glabrous; tube cylindric, somewhat enlarged at the apex, scarcely half an inch long; limb spreading, about half an inch in diameter; lobes obovate, cordate or retuse at the apex. *Capsule* oblong, a quarter of an inch long and an eighth of an inch broad.—S. A. Skan.

Fig. 1, calyx and pistil; 2, corolla laid open; 3, ovary:—*all enlarged.*

M. S. del, J.N Fitch lith.

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Tab. 8074.

LISTROSTACHYS hamata.

Tropical West Africa.

Orchidaceæ. Tribe Vandeæ.

Listrostachys, *Reichb. f. in Bot. Zeit.* 1852, p. 930; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 583, sub Angræco.

Listrostachys hamata, *Rolfe*; inter species hujus generis hucusque cognitas labelli calcare apice hamato facile distinguenda.

Herba epiphytica, robusta, circa 1 ped. alta. *Folia* recurva, oblonga, oblique et inæqualiter biloba, coriacea, circa 6 poll. longa, 1¼ poll. lata, lobis obtusis. *Scapi* axillares, arcuati, penduli, circa 6 poll. longi, multiflori. *Bracteæ* late ovatæ, obtusæ, conduplicatæ, nitidæ, brunneæ, 5–7 lin. longæ. *Pedicelli* 1–1½ poll. longi. *Flores* albi. *Sepala* recurva, lanceolato-linearia, acuminata, circa 1½ poll. longa; lateralia apice breviter bidentata. *Petala* sepalis minora, circa 1¼ poll. longa. *Labellum* a basi triangulari longe acuminatum, recurvum, circa 1¼ poll. longum; calcar pendulum, arcuatum, validum, basi subinflatum, apice subito recurvum, hamatum, minute bidentatum, circa 1¾–2 poll. longum, viride. *Columna* crassa, brevissima; rostellum subulatum, subobtusum, columna duplo longius; anthera apiculata.

This is a very distinct species of the *Listrostachys arcuata* group, more nearly allied to the S. African *L. arcuata*, Reichb. f. than is *L. Monteiræ*, Reichb. f., figured at t. 8026 of this work, and differing from all others in the remarkable hooked character of the apex of the spur. So anomalous is this character that at first the flower was suspected to be abnormal, but it extended uniformly to every flower of the raceme, and is invariably repeated when the plant flowers, so that it evidently represents the normal structure of the species. Apart from this and the shorter spur, the species is comparable with *L. chailluana*, Reichb f., which was figured at t. 5589, under the name of *Angræcum chailluanum*, Hook. f. The group is also represented in East Africa by two species, *L. Sedeni*, Reichb. f., and *L. Whytei*, Rolfe, both known in cultivation. The majority, however, are Western, and some half dozen species are at present only known from dried specimens.

Listrostachys hamata was received at Kew in 1899, among a small collection of Orchids from Lagos, presented

by Mrs. W. T. Martin, and first flowered (and subsequently) in December, 1900, in a tropical house.

Descr.—An erect, stout, epiphytic herb, under a foot high. *Leaves* recurved, oblong, obliquely and unequally bilobed, with obtuse lobes, coriaceous, about six inches long by an inch and a quarter broad. *Scapes* arching, and ultimately pendulous, about six inches long, many-flowered. *Bracts* broadly ovate, obtuse, conduplicate, about half an inch long, smooth, dark brown. *Pedicels* an inch to an inch and a half long. *Flowers* white, with a green spur. *Sepals* recurved, lanceolate-linear, acuminate, about an inch and a half long; the lateral pair shortly bidentate at the apex. *Petals* smaller than the sepals, otherwise similar, about an inch and a quarter long. *Lip* recurved, long acuminate from a triangular base, about an inch and a quarter long; spur curved, pendulous, rather stout, somewhat inflated at the base, suddenly recurved, hooked, and minutely toothed at the apex, about an inch and three-quarters to two inches long. *Column* very short and stout, with a subulate, obtuse rostellum, about twice as long as the column, and an apiculate anther.—R. A. Rolfe.

Fig. 1, tip of lateral sepal; 2, section of spur at apex; 3, column, showing the rostellum and anther; 4 and 5, pollinarium, seen from front and back:—*all enlarged.*

M.S. del. J.N. Fitch lith

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8075

Tab. 8075.

GENISTA dalmatica.

North-Western Balkan Peninsula.

Leguminosæ.—Tribe Genisteæ.

Genista, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 482.

Genista dalmatica, *Bartl. in Bartl. & Wendl.*, Beitr. Bot. pars ii. p. 74; *Reichenb.* Pl. Crit. vol. iv. p. 61, tab. 383; *G. sylvestri*, Scop., maxime affinis, spinis divaricatis rigidis, foliis magis redactis distincta.

Suffrutex rigidus, parvulus, a basi multiramosus, subpulvinatus; rami erecti vel ascendentes, præter ramulos spinigeros simplices vel ima basi tantum divisi, 3–4 poll. longi, pilosi; ramuli spinigeri numerosissimi quasi folia divaricato-pinnata referentes, aphylli vel foliis minutis subulatis mox deciduis, spinis tenuibus rigidis acutissime mucronatis ad 3 lin. longis. *Folia* pauca, imprimis in partibus ramorum inferioribus, sessilia, patula, linearia vel lineari-lanceolata, acuta, 2½–5 lin. longa, læte viridia, pilosa. *Racemi* terminales, densiusculi, 1–1½ poll. longi; bracteæ foliis similes sed angustiores, calycibus paulo breviores; pedicelli brevissimi; bracteolæ binæ, subulatæ, calyci adpressæ eius tubo æquilongæ. *Calyx* turbinato-campanulatus, 2 lin. longus, pilosulus, laciniis subulatis rectis tubo æquilongis. *Corolla* aurea, 4–5 lin. longa; vexillum late ovatum, breviter unguiculatum, quam carina brevius; alæ carina duplo breviores; carina obtusa, dorso sericeo-pubescens. *Ovarium* pilosum. *Legumen* patens, globoso-ovoideum, compressum, acumine brevi ascendente, 5–6 lin. longum, monospermum.—*Cytisus sylvestris*, var. *pungens*, Vis. Fl. Dalm. vol. iii. p. 269.

Genista dalmatica is a characteristic element of the xerophytic vegetation of Dalmatia, Herzegovina, and the Illyrian islands. It forms part of the underwood of the pine forests, and the shrubby vegetation of the "Karst" region; but also enters into the composition of the evergreen "macchie" (bush) of the islands. It is so closely allied to *G. sylvestris*, which takes its place in the flora of Istria and Carniolia, that the two might be considered as geographical races of one species. So far, however, *G. dalmatica* has maintained its peculiarities in cultivation, even in the moister climate of this country, where it flowers in June and July.

Descr.—A small, rigid shrub, forming dense tufts of numerous spinous hairy branches, three to four inches long; branches almost undivided, except at the base, but having spine-bearing branchlets, which resemble divaricately pinnate spinescent leaves, the spines being rigid, very pungent, and up to one-fourth of an inch long, with

or without minute deciduous leaves at their bases. *Leaves* few, mainly in the lower part of the branches, sessile, spreading, linear, or linear-lanceolate, acute, from about a sixth to half an inch, bright green, hairy. *Racemes* terminal, rather dense, an inch to an inch and a half; bracts resembling the leaves, but narrower, somewhat shorter than the calyx; pedicels very short; bracteoles two, subulate, adpressed to the calyx, reaching to the mouth of the calyx-tube. *Calyx* turbinate-campanulate, one-sixth of an inch, minutely hairy; segments as long as the tube, subulate, straight. *Corolla* bright yellow, a third of an inch or more; standard broad-ovate; shortly clawed, shorter than the keel; wings half the length of the keel; keel obtuse, silky-pubescent on the back. *Ovary* hairy. *Pod* spreading, globose-ovoid, shortly beaked, somewhat compressed, about half an inch, one-seeded.—Otto Stapf.

Fig. 1, calyx cut open; 2, stamens and pistil; 3, ovary in longitudinal section; 4, ovule:—*all enlarged.*

M.S. del. J.N. Fitch lith.

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Tab. 8076.

EUPHORBIA lophogona.

Madagascar.

Euphorbiaceæ. Tribe Euphorbieæ.

Euphorbia, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 258.

Euphorbia lophogona, *Lam. Encycl.* vol. ii. p. 417; *Boiss. in DC. Prodr.* vol. xv. ii. p. 78; DC. Pl. Grass. tab. 124, non *Lodd.*; inter species sectionis *Goniostematis* caulium angulis late lacerato-cristatis distinctissima.

Fruticulus erectus, pedalis, glaberrimus. *Caulis* basi lignescens, superne succulentus, parce ramosus, pentagonus, angulis obstipulas persistentes verticales subconfluentes laceratas late lacerato-cristatus. *Folia* in apice caulis ramorumque congesta, obovato-spatulata vel oblanceolata, longe in petiolum attenuata, apice obtusa vel subacuta, apiculata, apiculo sæpe plicato et recurvo (unde lamina emarginata) ad 8 poll. longa, 1–2 poll. lata, carnosa, saturate viridia, subtus medio purpurascentia; petiolus brevis vel brevissimus. *Cymæ* dichotomæ pedunculo 2 poll. longo suffultæ. cyathia 8–10 gerentes; bracteæ ad ramulorum bases minutæ, summæ 2 cyathia fulcrantes petaloideæ, suborbiculares, cuspidulatæ, 4–5 lin. diam., albæ vel roseo-suffusæ. *Cyathium* urceolare, vix 2 lin. diametro. *Involucrum* 5-lobum, lobis rotundatis inflexis fimbriatis, glandulis breviter stipitatis ellipticis ½ lin. longis centro depressis. *Florum* masculorum bracteolæ lineari-subulatæ, ciliatæ. *Antheræ* luteæ. *Ovarium* globosum, sub-3-lobum; styli ad medium connati; stigmata bifida, linearia, revoluta. *Capsula* ignota.

This very pretty and quaint species was originally discovered by Commerson in woods near the village of Réchousamenti, in Madagascar. According to Boissier, it was also collected by Boivin in the island of St. Marie. It was for some time in cultivation in the Jardin des Plantes at Paris, but seems to have disappeared long ago. It was rediscovered by Mr. Scott Elliot in woods near Fort Dauphin in 1889, and subsequently introduced into France from the same locality by M. Godefroy-Lebœuf, who communicated a specimen to Kew, where it flowers annually in the Succulent House.

Descr.—A small, erect, glabrous shrub. *Stem* woody at the base, otherwise succulent, simple, or very sparingly branched, five-angular, the angles crested by the large vertical almost confluent deeply lacerate persistent stipules. *Leaves* in tufts at the ends of the stem and branches, obovate-spathulate or oblanceolate, long attenuated at the base, obtuse at the apex or subacute, apiculate, with the apiculus folded and recurved (hence

the leaves apparently emarginate), the largest eight inches long, by one to two inches broad, fleshy, deep green, often purplish beneath in the upper part; petiole short, or very short. *Cymes* dichotomous, of eight to ten cyathia, on an erect peduncle, two inches long; bracts at the base of the branchlets quite small, the uppermost pair forming an outer involucre to the cyathium, petaloid, suborbicular, cuspidulate, about a third of an inch in diameter, white or pinkish. *Cyathium* urnshaped, scarcely a sixth of an inch in diameter. *Involucre* five-lobed, lobes rotundate, fimbriate, inflexed, glands shortly stipitate, elliptic, depressed in the centre, a twelfth of an inch long. *Male flowers* with subulate ciliate bracteoles between them. *Ovary* globose, somewhat three-lobed; styles connate to the middle; stigmas bifid, linear, revolute. *Capsule* unknown. —Otto Stapf.

Fig. 1, a cyathium; 2, part of the involucre of the cyathium, seen from within; 3, bracteoles of the cyathium; 4, male flower; 5, pistil:—*all enlarged*.

M.S.del. J.N.Fitch lith.

L.Reeve & Co. London.

Vincent Brooks, Day & Son Lith.

Tab. 8077.

MAGNOLIA hypoleuca.

Japan and China.

Magnoliaceæ.—Tribe Magnolieæ.

Magnolia, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 18.

Magnolia hypoleuca, *Sieb. et Zucc. Fl. Jap. Fam. Nat.* sect. i. p. 79; *K. Ito, Koishikawa Shokubutsuyen Sōmoku Dsusetsu,* vol. i. tt. 14 et 15; *Sargent in Garden and Forest,* vol. i. (1888), p. 304, f. 49; *Henry, Notes on the Economic Botany of China,* p. 27; *Useful Plants of Japan,* p. 132, f. 533; *Shirasawa, Iconogr. des Essences Forest. du Japon,* vol. i. p. 70, t. 39, ff. 13—29; *E. H. Wilson in Gard. Chron.* 1906, vol. i. p. 234; *Kwa-wi, Arb.* vol. ii. fol. 2; *Honzo Zufu,* vol. lxxxii. fol. 8 recto; species distincta habitu *M. Umbrellæ,* Desr. similis, foliis deciduis magnis obovatis, floribus foliis submaturis coætaneis flavescenti-albis vel albis, fructu strobiliformi elliptico.

Arbor magna, sæpe 50–80 ped. interdum 100 ped. alta, trunco usque ad 2–3 ped. diam.; rami late patentes, longi, novelli sericei, cortice levi brunneo conspicue lenticellato tecti. *Folia* decidua, sæpius in apicibus ramorum subverticillata, breviter petiolata, obovata vel elliptico-obovata, sæpe 8–15 poll. longa et 6–8 poll. lata, supra atro-viridia, glabra, subtus glauco-viridia, plus minusve præsertim ad venas primarias pilosa, rotundata vel rarius breviter cuspidata, basi cuneata vel interdum paulum rotundata; venæ laterales primariæ utrinque 18–24. *Flores* cum foliis submaturis coætanei, flavescenti-albi vel albi, gravissime fragrantes, 6–8 poll. diametro. *Sepala et petala* obovato-spathulata, coriacea, rotundata vel paulum cuspidata. *Staminum* filamenta vivide rubro-purpurea. *Fructus* strobiliformis, ellipsoideus, 5–8 poll. longus, erectus, usque ad maturitatem ruber; carpella ultra 100, truncata.—*M. glauca a,* Thunb. Fl. Jap. p. 236, non Linn.

This *Magnolia* is widely spread in Japan, but it is in the damp rich forests covering the low hills of Yezo that it is to be seen at its best. It was only here, Professor Sargent informs us, and on the high mountains in the extreme northern part of the main island that he saw it of large size. Shirasawa observes that on the plains it grows with *Quercus glandulifera*, species of *Carpinus*, &c., and on the mountains with *Fagus japonica* and species of *Acer* and *Betula*. It is found at altitudes up to 5,600 feet.

In Western and Central China the tree is common around dwellings at elevations between 2,500 and 4,500 feet, but Dr. Henry and Mr. E. H. Wilson, who have collected specimens in China, never met with it in an undoubtedly wild state. Mr. Wilson sent seeds to Messrs. Veitch, who now have the Chinese plant growing in their nursery at

Coombe Wood. It is known to the Chinese as the "Hou p'o." A valuable drug, which is distributed to all parts of the Empire, is prepared from its bark and flowers.

The wood of *Magnolia hypoleuca* is light, soft and compact, and is easily worked. The Japanese use it for making tools, spinning-wheels, engraving-blocks, pencils and numerous objects for lacquering, while its charcoal furnishes an excellent metal-polish. It is the most valuable of all the Japanese Magnolias. Its native name in Japan is "Hōnoki."

This species has been in cultivation in the United States since 1865, and its flowering there was recorded in 1888. The specimen figured was from a Kew plant raised from seeds received from a Japanese nursery in 1890. It is now about 14 feet high, and first flowered in June, 1905. Earlier in the same month a plant in the garden of B. E. C. Chambers, Esq., of Haslemere, obtained from Yokohama in 1884, also flowered for the first time, producing twenty-five flowers.

Descr.—A large tree often fifty to eighty feet, and sometimes a hundred feet high, with a stem up to two or three feet in diameter; branches widely spreading, long, silky-hairy on the young growths; bark smooth, brown, with conspicuous lenticels. *Leaves* deciduous, usually in tufts at the ends of the branches, shortly petioled, obovate or elliptic-obovate, frequently eight to fifteen inches long and six to eight inches broad, dark green and glabrous above, glaucous-green below, and more or less pilose, especially on the principal veins, rounded, or more rarely shortly cuspidate, cuneate, or sometimes rounded at the base; primary lateral veins eighteen to twenty-four on each side of the mid-rib. *Flowers* creamy-white or white, highly fragrant, six to eight inches in diameter, produced when the leaves are nearly full-grown. *Sepals* and *petals* obovate-spathulate, leathery, rounded, or slightly cuspidate. *Filaments* bright reddish purple. *Fruit* cone-like, ellipsoid, five to eight inches long, erect, red till mature; carpels more than a hundred, truncate.—S. A. Skan.

Fig. 1, stipules; 2, stamen; 3, longitudinal section of two young carpels:—*all enlarged.*

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M.S del, J.N.Fitch lith

Vincent Brooks, Day & Son Lith Imp

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Tab. 8078.

GONIOSCYPHA EUCOMOIDES.

Eastern Himalaya.

Liliaceæ. Tribe Aspidistreæ.

Gonioscypha, *Bak.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 773.

Gonioscypha eucomoides, *Bak. in Journ. Linn. Soc.* vol. xiv. p. 581, tab. xix.; *N. E. Brown in Gard. Chron.* ser. ii. vol. xxvi. p. 744; *Masters in Gard. Chron.* ser. iii. vol. xx. p. 748, fig. 129.

Species unica.

Herba perennis, subacaulis, glabra, rhizomate brevi radices crassas tomentosas emittente. *Folia* pauca basalia, elliptica vel elliptico-oblonga, magis minusve acuminata, basi breviter in petiolum attenuata, 10–16 poll. longa, 5–8 poll. lata, firma, viridia, costa superne evanescente, nervis secundariis utrinque circiter 8, tertiariis plerumque 3 interjectis, venis transversis laxis; petiolus latus, 3–4 poll. longus. *Spica* pedunculata, cylindrica, densa, 3–5 poll. longa, $\frac{3}{4}$–$1\frac{1}{2}$ poll. diametro, comoso-bracteata; pedunculus nudus, 7–9 poll. longus; bracteæ subulatae, $\frac{1}{2}$–$\frac{3}{4}$ poll. longæ, patulæ, summæ steriles in comam densam congestæ. *Perigonium* carnosum, circiter 4 lin. longum, luride viride; tubus cylindricus 3 lin. longus; lobi subpatuli, concavi, rotundi, margine crispi, subcucullati, $1\frac{1}{4}$–$1\frac{1}{2}$ lin. longi. *Antheræ* in ore sessiles, oblongæ, obtusæ, 1 lin. longæ, flavæ. *Ovarium* globoso-ellipsoideum, 3-loculare, loculis 3-ovulatis; stylus clavato-cylindricus, superne triangularis, ad 2 lin. longus; stigma minute 3-lobum. *Bacca* globoso-ellipsoidea. $\frac{1}{2}$ poll. longa, exsiccando fuscescens, subpruinosa, monosperma. *Semen* ovoideum 5 lin. longum, embryotegio depresso orbiculari supra medium sito; endospermum osseum. *Embryo* cylindricus, ab embryotegio ultra seminis centrum porrectus.

This plant was discovered by Thomas J. Booth, who collected Rhododendrons in the Eastern Himalaya for his uncle, Thos. Nuttall, the well-known American botanist. *Gonioscypha* as well as the Rhododendrons, sixteen of which were described as new by Nuttall in Hooker's Journal of Botany of 1853, are generally put down as natives of Bhotan. But it must be understood that this is not the Bhotan of our days. From letters by Nuttall to Sir William Hooker, and from Nuttall's publication mentioned above, it appears that Booth collected in the Daphla and Aka Hills late in 1850. It has since been collected again in the same region by Mr. J. L. Lister in 1874, who quotes as locality: "Daphla Hills, on the top of Yearsi, 4,500 feet." It was first introduced into cultivation by Mr. W. Bull, of Chelsea, who, about 1886, sent a specimen to Kew,

where it has frequently been in flower. Here, as in its home where Booth found it flowering on November 2nd, it produces the flowers very late in the year.

Descr.—A perennial and glabrous herb with a short rhizome producing stout tomentose roots. *Leaves* few in a rosette, elliptic or elliptic-oblong, more or less acuminate, shortly narrowed into the petiole, ten to fifteen inches long, five to six inches broad, firm, green, mid-rib disappearing in the upper part, secondary nerves about eight on each side with three tertiary nerves between them and scanty transverse veins; petiole broad, three to four inches long. *Spike* peduncled, cylindric, dense, three to four inches long, three-quarters to over one inch in diameter; peduncle naked, four to nine inches long; bracts subulate, one-half to three-quarters of an inch long, horizontally spreading, the uppermost barren and gathered into a dense terminal tuft. *Perigone* somewhat fleshy, about one-third of an inch long, lurid green; tube cylindric, one quarter of an inch long; lobes rather spreading, concave, rounded, almost hooded, not quite half as long as the tube, with crisp margins. *Anthers* sessile in the throat of the corolla, oblong, a twelfth of an inch long, yellow. *Ovary* globose-ellipsoid, three-celled, with three ovules in each cell; style clavate-cylindric, triangular in the upper part, a sixth of an inch long; stigma minutely three-lobed. *Berry* globose-ellipsoid, half an inch long, dark brown, when dry, slightly pruinose, one-seeded. *Seed* ovoid, not quite half an inch long; endosperm bony. *Embryo* cylindric, extending obliquely from the small depressed circular embryotegium through the centre of the seed.—Otto Stapf.

Fig. 1, flower seen from above; 2, perigone, cut open; 3, pistil; 4, a whole plant:—1–3 *enlarged*, 4 *reduced*.

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Tab. 8079.

GERBERA aurantiaca.

A native of Natal and the Transvaal.

Compositæ.—Tribe Mutisiaceæ.

Gerbera, *Gronov.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 497.

Gerbera aurantiaca, *Sch. Bip. in Flora*, vol. xxvii. p. 781; *Harv. & Sond. Fl. Cap.* vol. iii. p. 523; affinis *G. Jamesoni*, Bolus, differt foliis integris et floribus radii numerosioribus pulchre sanguineis.

Herba acaulis; rhizoma collo densissime sericeo-villoso. *Folia* radicalia, adscendentia, 5–10 poll. longa, 1–2 poll. lata, oblanceolata vel elongato-oblongo-lanceolata, acuta, basi in petiolum ¾–2 poll. longum longe angustata, integra, obscure denticulata vel crenata, supra plus minusve pubescentia, subtus araneo-albo-tomentosa vel fere glabra. *Pedunculus* solitarius, 4½–16 poll. longus, araneo-albo-tomentosus. *Capitulum* 2–3 poll. diam.; involucri squamæ numerosæ; interiores 7–9 lin. longæ, exteriores breviores, lanceolatæ, acuminatæ, albo-tomentosæ. *Flores* omnes bilabiati; flores radii lobo ligulato 1–1⅓ poll. longo 1–2 lin. lato lineari lanceolato, acuto vel 2–3-dentato sanguineo subtus luteo, lobis 4 minimis linearibus tortis sanguineis; flores disci 5 lin. longi, lobis 2 liberis, 3 connatis linearibus revolutis fusco-purpureis. *Antheræ* caudatæ, luteæ. Stigma exsertum, subclavatum, bilobum, luteum. *Achænia* puberula. *Pappi* setæ violaceo-purpureæ.

This pretty plant is allied to the better-known *G. Jamesoni*, figured at t. 7087, differing from that species in its entire leaves and the rich blood-red colour of its more numerous and more crowded ray florets. *G. aurantiaca* is a native of Natal and the Transvaal, where it grows at an elevation of 3,000 to 5,000 feet above sea-level. It was originally discovered by Krauss on a hill near Pietermaritzburg, where .subsequent collectors have also found it, and it is remarkable that such a beautiful plant should not have been introduced from such a frequented locality into cultivation long ago. This species and *G. Jamesoni* appear to be the only two of the genus introduced into European gardens, although there are about 50 known natives of South and Tropical Africa, Madagascar, and Temperate and Tropical Asia. The plant figured was purchased from M. Max Leichtlin, who states that it was introduced from Natal by a daughter of Baron Saint Paul, and it flowered at Kew in June, 1905. It is probably half-hardy, but as the region in which it grows has a very

small rainfall during the winter, it requires greenhouse protection with very little water during that season.

Descr.—*Rootstock* very densely white-woolly at the crown. *Leaves* all radical, ascending, five to ten inches long, one to two inches broad, oblanceolate to elongated oblong-lanceolate, acute, tapering from above or below the middle into the three-quarters of an inch to two inches long petiole, entire or obscurely denticulate or slightly crenate, thinly or densely pubescent above, more or less cobwebby-white-tomentose or nearly glabrous beneath. *Peduncle* one to each growth, four and a half to sixteen inches long, white-tomentose. *Flower-head* solitary, two to three inches in diameter; involucre-scales numerous, the inner about half to three-quarters of an inch long, the outer shorter, lanceolate, acuminate, more or less cottony-white on the back. *Florets* all bilabiate, those of the ray with four very small linear curled segments and one linear-lanceolate spreading segment one to one and a third of an inch long and one-twelfth to one-sixth of an inch broad, acute or two to three toothed at the apex, bright blood-red, yellow beneath; disk florets nearly half an inch long, with one broad and two slender linear revolute segments, brownish-purple. *Anthers* tailed, yellow. *Stigma* exserted, somewhat clavate, shortly two-lobed, yellow. *Achenes* puberulous, with violet-purple pappus.—N. E. Brown.

Fig. 1, a ray-flower, the broad lobe of the corolla cut off at the middle; 2, a bristle of the pappus; 3, a disk-flower; 4, anthers; 5, whole plant, reduced:—*figs.* 1–4 *enlarged;* fig. 5 about one-sixth of the natural size.

M. S del J.N.Fitch hth.

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Tab. 8080.

GLADIOLUS PRIMULINUS.

Tropical Africa.

Irideæ. Tribe Ixieæ.

Gladiolus, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 709.

Gladiolus primulinus, *Baker in Gard. Chron.* 1890, vol. ii. p. 122, et *Handb. Irideæ*, p. 222; *G. quartiniano*, A. Rich., valde affinis, perianthii colore recedit.

Cormus globosus, plusquam 1 poll. diam. *Folia* circa 3, ensiformia, circa 1½ ped. longa, ad 1 poll. lata, subcoriacea, rigide costata. *Scapus* ad 3 ped. altus. *Spica* 3–5-flora, laxa, secunda; spathæ valvæ lanceolatæ, exteriores ad 1½ poll. longæ. *Perianthium* primulinum, immaculatum; tubus 1 poll. longus, parte superiore valde curvatus; segmenta superiora ovata vel obovata, cucullata, acuminata, 2 poll. longa, 1¼ poll. lata; segmento intermedio genitalia tectante; segmenta inferiora quam superiora multo minora, deflexa. *Stamina* quam perianthii segmenta dimidio breviora. *Stylus* quam stamina multo longior.

While this plant has been regarded by Mr. J. G. Baker (*Thiselton-Dyer, Fl. Trop. Afr.* vol. iii. p. 371) as a form of *G. quartinianus*, A. Rich., the distinctive clear primrose colour of its flowers, without any tendency to become spotted or striped, warrants its retention as a species for horticultural purposes.

It was discovered in the Usagara Mountains in 1887 by Mr. J. T. Last, who sent corms to Kew, where flowers were first produced in 1890. Since then it has been sent from the "Rain Forest," opposite the Victoria Falls, by Mr. Francis Fox, engineer of the bridge over the Zambesi, who re-introduced it into cultivation and flowered it at Wimbledon, and later by Mr. C. E. F. Allen, Forester to the Rhodesia Railways Co., who describes its habitat as "one of the wettest parts near the Falls,—a perpetual deluge." He also states that the upper perianth-lobes "form a kind of umbrella for the inside of the flower." The plant figured was forwarded to Kew by Mr. C. F. H. Monro, of Bulawayo, and flowered in a frame in September last. It appears to thrive under cultivation, and its exquisite clear yellow flowers make it a desirable addition to the cultivated species of this genus.

Descr.—*Corm* globose, more than an inch in diameter. *Leaves* about three produced, ensiform, about eighteen

inches long and up to an inch broad, almost coriaceous, nerves very prominent when dried. *Inflorescence* up to three feet high; spike three- to five-flowered, lax, secund; spathe-valves lanceolate, the outer up to an inch and a half long. *Perianth* uniformly primrose-yellow; tube an inch long, much curved above; three upper segments ovate or obovate, cucullate, acuminate, two inches long, an inch and a quarter wide, the central one entirely covering the genitalia; three lower much smaller, deflexed. *Stamens* about half as long as the perianth-lobes. *Style* much longer than the stamens.—C. H. Wright.

Figs. 1 and 2, anthers; 3, stigmas:—*all enlarged*.

M.S. del. J.N. Fitch lith.

Vincent Brooks Day & Son Lith.

L. Reeve & Co. London.

Tab. 8081.

RHODODENDRON Vaseyi.

North and South Carolina.

Ericaceæ. Tribe Rhodoreæ.

Rhododendron, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 599.

Rhododendron Vaseyi, *A. Gray in Proc. Amer. Acad.* vol. xv. (1880), p. 48. *in Coulter's Bot. Gaz.* vol. viii. p. 282, et *Syn. Fl. N. Amer.* vol. ii. pt. i. (ed. 2), p. 398; *J. Donnell Smith in Bull. Torr. Bot. Club.* vol. xv. p. 164; *C. S. S. in Garden and Forest*, vol. i. (1888), p. 376, f. 60; *Gard. Chron.* 1896, vol. ii. p. 71, f. 14; *R. rhombico*, Miq., valde affine, sed fere omnino glabratum, foliis angustioribus et longioribus, floribus minoribus, staminibus 4–7, capsula angustiore et longiore haud setosa differt.

Frutex usque ad 18 ped. altus, ramulis gracilibus primum breviter pubescentibus demum glabrescentibus. *Folia* breviter petiolata, membranacea, vivide viridia, primum parce vel interdum infra dense pubescentia, mox fere glabrata, obovato-oblonga vel oblongo-lanceolata, $2\frac{1}{2}$–5 poll. longa, $\frac{3}{4}$–$1\frac{3}{4}$ poll. lata, utrinque acuta vel acuminata. *Flores* præcoces, inodori, 4–8 in apicibus ramulorum umbellatim dispositi. *Pedicelli* circiter 5 lin. longi, post anthesin recurvati, cum calyce parvo truncato glandulis stipitatis instructi. *Corolla* vivide rosea vel purpurea, interdum fere alba, lobis posticis intus basi rubro-punctatis, glaberrima, rotato-campanulata, subbilabiata, circiter 1 poll. longa et $1\frac{1}{2}$ poll. in diam.; lobi oblongi vel oblongo-obovati, 3 postici 7–9 lin. longi, anticis late patentibus paulum breviores. *Stamina* 5 vel 7, rare 4, inæqualia, longiora ut stylus corollam paulum superantia. *Ovarium* glandulis stipitatis dense instructum. *Capsula* anguste oblonga vel oblongo-ovoidea, circiter $\frac{1}{2}$ poll. longa, reliquiis glandularum scabriuscula, basi styli coronata.

While possessing many of the qualities of a valuable plant for cultivation in our gardens, *Rhododendron Vaseyi* is botanically of considerable interest as an illustration of the relationship between the flora of the South-Eastern United States and that of China and Japan. The plant here figured is known only from North and South Carolina. It is totally different from all the other American Rhododendrons, while it has a good deal in common with species confined to Japan. Asa Gray, in describing *R. Vaseyi*, states that "The American Azaleas previously known consist of one aberrant species, *R. Rhodora*, and of a well-marked group (to which *R. ponticum* also belongs) characterized by a long-tubed funnel-form corolla and long exserted stamens and style. But the East Asiatic species of the same true *Azalea* subgenus have campanulate

or rotate-campanulate corollas, and some of them very deciduous perulæ to the separate flower-buds." *R. Vaseyi* "is one of that group, and it thus adds another to the now very numerous cases of remarkable relationship between the Chino-Japanese and the Alleghanian floras." It is closely allied to *R. Albrechtii*, Maxim., and perhaps nearer still to *R. rhombicum*, Miq. (t. 6972), and *R. dilatatum*, Miq. (t. 7681); all Japanese species.

R. Vaseyi was first discovered by Mr. G. R. Vasey in 1878 on Balsam Mountain, Jackson County, North Carolina. It was afterwards found on Grandfather Mountain, Caldwell County, in the same State, and in Cashier's Valley, South Carolina. Mr. S. T. Kelsey informs us that on Grandfather Mountain it was growing everywhere in clumps and patches on the southern and south-eastern slopes at 4,500 to 5,500 ft. elevation, but most abundantly and vigorously in moist situations. It is associated with *R. maximum*, *R. catawbiense*, and *Kalmia latifolia*.

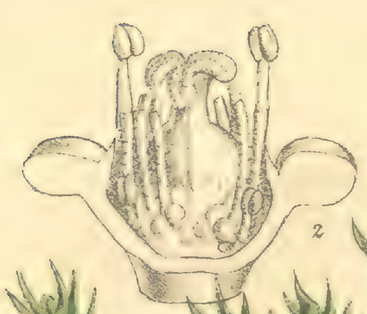
Professor Sargent mentions that Mr. Faxon, the author of the figure in the *Garden and Forest*, noticed that the upper or posterior lobe of the corolla is exterior in the expanded flower, a peculiarity not detected in any other *Rhododendron*. The same lobe is innermost in æstivation.

The Kew plants which furnished the material for the accompanying plate were raised from seed received from the Arnold Arboretum in 1891. They are perfectly hardy, and flower annually early in May.

Descr.—A shrub attaining a height of eighteen feet; branches slender, at first shortly pubescent, afterwards glabrescent. *Leaves* shortly petiolate, membranous, bright green, at first sparingly or sometimes on the underside densely pubescent, soon almost glabrous, obovate-oblong or oblong-lanceolate, two and a half to five inches long, three-quarters to one and three-quarters of an inch broad, acute or acuminate at both ends. *Flowers* precocious, odourless, four to eight in an umbel-like inflorescence at the ends of the branches. *Pedicels* scarcely half an inch long, recurved after flowering, covered, as well as the small truncate calyx, with stalked glands. *Corolla* bright rose or purple, sometimes almost white, red-spotted inside at the base of the upper lobes, quite glabrous, rotate-campanulate, two-lipped, about one inch long and one inch

and a half in diameter; lobes oblong or oblong-obovate, the three upper rather more than half an inch to three-quarters of an inch long, slightly shorter than the lower widely spreading ones. *Stamens* five or seven, rarely four, unequal, the longer ones and the style slightly exceeding the corolla. *Ovary* densely covered with stalked glands. *Capsule* narrowly oblong or oblong-ovoid, about half an inch long, rather scabrid with the remains of the glands, crowned by the persistent base of the style.—S. A. Skan.

Fig. 1, calyx and pistil; 2 and 3, anthers with part of filaments attached:—*all enlarged.*



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Tab. 8082.

EUPHORBIA procumbens.

South Africa.

Euphorbiaceæ. Tribe Euphorbieæ.

Euphorbia, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 258.

Euphorbia procumbens, *Miller, Dict.* ed. 8, no. 12, non auctorum aliorum, ex affinitate *E. Caput-medusæ*, Linn., a qua glandulis involucri integris differt.

Herba succulenta 3–6 poll. alta, inermis, glabra. *Caulis* crassissimus, cylindricus, tuberculatus, 2–4 poll. diam., apice truncatus et ad marginem disci stellatim multiramosus. *Rami* patentes vel subdeflexi, usque ad 6 poll. longi, $\frac{1}{3}$–$\frac{1}{2}$ poll. crassi, leviter curvati, teretes, tuberculati; tubercula subrhomboidea, decurrentia. *Folia* carnosa, $\frac{1}{8}$–$\frac{1}{3}$ poll. longa, patentia, linearia, acuta, supra leviter concava, subtus convexa. *Cyathia* pedunculata, in caulis truncati et ramorum interiorum apicibus disposita, glandulis inclusis $\frac{1}{3}$ poll. diam., hemispherica, 5-loba; lobi late rotundati, fimbriati, erecti; glandulæ transverse oblongæ, obtusæ, integræ, luteæ, demum rubescentes. *Flores* masculi numerosi, pedicellis superne pubescentibus. *Ovarium* trigonum, pubescens; styli connati; stigma trilobum, lobis late cuneato-obcordatis.—*E. pugniformis*, Boiss. in DC. Prodr. vol. xv. 2, p. 92; Saunders, Ref. Bot. vol. iii. t. 161. *E. Caput-medusæ*, var. δ, Linn. Sp. Pl. ed. i. p. 452. *Medusea procumbens*, Haw. Synop. Pl. Succ. p. 134. *Euphorbium humile, procumbens, ramis simplicibus copiosis, caule crassissimo, tuberoso*, Burman, Pl. Afr. p. 20, t. 10, f. 1.

Of all the dwarf succulent South African *Euphorbiæ* this is undoubtedly the most striking from the mass of flowers and the contrast of their brilliant colours. It appears, however, to be a rare species, though cultivated in England before 1768; but neither Miller, who described it at that date, nor Haworth, forty-four years later, makes any mention of the flowers, which were apparently unknown to them. Subsequently it died out of cultivation, and was re-introduced by Mr. T. Cooper about 1860. The specimen here figured is an old and well-grown plant in the possession of Mr. Justus Corderoy, Blewbury, Didcot, which flowered in July, 1905. Mr. Corderoy is remarkably successful in the cultivation of succulents, and has had the present plant in flower many times. *E. procumbens* is allied to the better known *E. Caput-medusæ*, which differs in having green flowers with the glands of the involucre 3-toothed. The two previous figures, quoted above, represent much younger plants than the one here

depicted, for with age the stem thickens, and the branches become more numerous and longer. Burman's figure is an excellent representation of the plant as I saw it between thirty and forty years ago in Mr. Cooper's collection.

Descr.—A dwarf, glabrous succulent, three to six inches high, with a spread of from five to twelve inches. *Stem* very thick, cylindric, tuberculate, truncate, and forming a disk two to four inches in diameter at the top, from which spring stellately spreading or slightly deflexed branches in few or many series according to age. *Branches* slightly curved, up to six inches long, one-third to one-half of an inch thick, terete, tuberculate, bright green; tubercles rhomboid, decurrent. *Leaves* one-eighth to one-third of an inch long, spreading, fleshy, narrowly linear, slightly concave above, convex beneath, green. *Flowers* (inflorescences) very numerous, covering the disk-like top of the stem and tips of the short, inner branches, pedunculate. *Peduncles* up to half an inch long, bracteate, with a few oblong or elliptic obtuse fimbriate scales at the top, green. *Involucre* cup-shaped, including the glands, about one-third of an inch in diameter, five-lobed; lobes erect, broadly rounded, fimbriate; glands spreading, transversely oblong, obtuse, entire, yellow, changing to orange and bright red. *Male flowers* (stamens) numerous, pedicels pubescent on the upper half. *Female flower* (ovary) three-angled, pubescent; styles connate; stigma three-lobed, lobes broadly cuneate-obcordate, recurved at the apex at maturity.—N. E. Brown.

Fig. 1, an inflorescence; 2, the same in section; 3, part of the involucre with glands and lobes (the latter should be erect); 4, pedicel of a male flower from which the stamen has fallen; 5, male flower; 6, sketch of the whole plant, *reduced*:—figs. 1–5 *enlarged*.

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Tab. 8083.

DEUTZIA Wilsoni.

W. China.

Saxifragaceæ. Tribe Hydrangeæ.

Deutzia, *Thunb.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 642.

Deutzia Wilsoni, *Duthie* (sp. nov.); ex affinitate, *D. discoloris* Hemsl., sed foliis scabrioribus, pedicellis robustioribus, calycis lobis latioribus, et staminum alis angustioribus edentatis.

Rami rubro-brunnei, cortice cito deciduo. *Folia* 3–4½ poll. longa, 1–1½ lata, discoloria, oblongo-lanceolata vel elliptica, acuta vel breviter acuminata, basi rotundata vel cuneata, crebre calloso-serrulata, utrinque (subtus densissime) squamis minutis stellatis vestita, venis primariis subtus elevatis hispidulis, petiolo 2–4 lin. longo superne profunde sulcato. *Flores* albi, 10 lin. diametro, laxiuscule paniculati; inflorescentiæ ramulis quadrangularibus flavo-brunneis. *Bracteæ* circa ½ poll. longæ, lineares vel lineari-lanceolatæ, deciduæ, marginibus ciliatis. *Pedicelli* 2–3 lin. longi, squamigeri. *Calyx* 3 lin. longus; tubus hemisphæricus, squamis albis stellatis dense indutus; lobi persistentes, tubum æquantes, ovato-oblongi, obtusi vel obscure mucronati, intus glabri, marginibus ciliati. *Petala* obovata, extra puberula, marginibus undulata, apice cucullata. *Stamina* decem, alterna breviora, filamentis petaloideis longioribus sursum sensim attenuatis brevioribus abrupte angulatis haud bilobis; antheræ minute pilosæ. *Styli* tres, persistentes. *Capsula* hemisphærica, 3-locularis, calycis lobis persistentibus coronata.

A very handsome shrub, resembling in general appearance *D. discolor*. It may, however, be distinguished by its more hairy and scabrous foliage, and by its more robust branchlets and pedicels; also the calyx-lobes are shorter and broader, the corolla, when fully expanded, is flatter, and not cup-shaped, and the winged filaments are much narrower, and not bilobed towards the apex. It was discovered in Western China by Mr. E. H. Wilson. The drawing and description were prepared from fresh material supplied by Messrs. J. Veitch & Sons last year, during the month of June.

Descr.—*Branches* reddish brown, bark soon peeling. *Leaves* three to four and a half inches long, and about one to one and a half inches broad, oblong-lanceolate or elliptic, acute, or shortly and obliquely acuminate, rounded or cuneate at the base, scabrous on both surfaces, with stellate hairs, paler beneath, and with the midrib and veins hispidulous, teeth of serrate margins with callous tips;

petiole one-sixth of an inch to one-third of an inch long, deeply channelled above. *Flowers* five-sixths of an inch across, almost flat when fully expanded, pure white, arranged in rather open trichotomous panicles; primary branches of inflorescence, quadrangular, yellowish brown; bracts deciduous, half an inch or less, falcately linear-lanceolate, margins ciliate; pedicels one-sixth of an inch to a quarter of an inch long, rough with stellate hairs. *Calyx* a quarter of an inch long; tube hemispheric, densely clothed outside with scattered groups of minute white, stellate hairs; lobes as long as the tube, ovate-oblong, obtuse or obscurely mucronate, glabrous, and dark green within, margins ciliate. *Petals* obovate, puberulous outside, margins undulate, tip cucullate. *Stamens* alternately long and short. The longer ones one-third of an inch long, the winged filaments tapering gradually upwards; short stamens a quarter of an inch long, the wings abruptly angular upwards, not bilobed; anthers minutely pilose. Fruiting-calyx one third of an inch across, lobes spreading or reflexed. *Styles* 3, persistent. *Capsule* hemispheric, three-celled.—J. F. Duthie.

Fig. 1, calyx and pistil; 2 and 3, stamens:—*all enlarged.*

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Tab. 8084.

PAPHIOPEDILUM GLAUCOPHYLLUM.

Java.

Orchidaceæ. Tribe Cypripedieæ.

Paphiopedilum, *Pfitzer Morphol. Stud. Orchideenbl.* p. 11 (char. emend.); *Rolfe in Orch. Rev.* 1896, p. 363.

Paphiopedilum glaucophyllum, *J. J. Smith in Bull. Inst. Bot. Buitenz.* vol. vii. (1900), p. 1; *Ic. Bogor.* vol. ii. t. 101, fig. A; *Orch. Jav.* p. 22; *Orch. Rev.* 1905, pp. 29, 208, fig. 44; aff. *P. Chamberlainiano,* Pfitzer, sed foliis latioribus concoloribus glaucescentibus et petalis pubescentibus differt.

Herba terrestris, cæspitosa. *Folia* oblonga, obtusa, glaucescentia, 6-9 poll. longa, $1\frac{3}{4}$–$2\frac{1}{4}$ poll. lata. *Scapi* erecti, pubescentes, 1–$1\frac{1}{2}$ ped. longi, diu persistentes et florentes, apice recurvi. *Bracteæ* late cymbiformes, obtusæ, $\frac{1}{2}$–1 poll. longæ, dorso pubescentes. *Pedicelli* circa 2 poll. longi, pubescentes. *Flores* seriatim evoluti, speciosi. *Sepalum* posticum suborbiculare, obtusum, subundulatum, circa $1\frac{1}{4}$ poll. latum, viride, pallide luteo-marginatum; sepala lateralia connata, valde concava, postico minora. *Petala* patentia, subhorizontalia, lineari-oblonga, obtusa, spiraliter torta et undulata, ciliata, circa $1\frac{3}{4}$ poll. longa, alba, purpureo-maculata. *Labellum* circa $1\frac{1}{2}$ poll. longum; saccus inflatus, roseo-purpureus, punctulatus, viridi-marginatus; lobi laterales angulati. *Staminodium* ovatum, obtusum, convexum, purpureum, basi viride, pilosum.—*Cypripedium glaucophyllum,* Gard. Chron. 1903, ii. p. 405, fig. 161, cum ic. pict.; Rev. Hort. Belg, 1904, p. 193, cum ic. col.

There is a very natural section of the genus *Paphiopedilum*, differing from all others in having a persistent inflorescence, which gradually elongates, producing bracts and flowers in succession for a long period. It contains three species, two of which, both natives of Sumatra, and having marbled leaves, have already been figured in this work. The original species, *P. Chamberlainianum*, Pfitzer (t. 7578), has an inflated lip, and the dorsal sepal and petals striped, and *P. Victoria-Mariæ*, Rolfe (t. 7573), has a more elongated lip, without brown stripes. That now figured completes the group, and, though quite similar in habit, is markedly different in its glaucous, unmarbled leaves, and very hairy petals, blotched with red-purple, though the dorsal sepal is without stripes, in this respect most resembling *P. Victoria-Mariæ*.

P. glaucophyllum, J. J. Smith, is a native of East Java, and was discovered by Mr. J. J. Smith, of the Buitenzorg

Botanic Garden, near Turen, and described in 1900. Soon afterwards it was met with by M. Rimestad, a collector of Orchids in Java, who sent a drawing to Europe, and ultimately living plants, one of which was exhibited at a meeting of the Royal Horticultural Society in September, 1903, by Messrs. Charlesworth & Co. The plant figured was purchased by Kew from Messrs. Sander & Sons, and began to flower in a Tropical House in October, 1905, continuing for a long period. At the present time another inflorescence is following the same course.

Descr.—A terrestrial, tufted herb. *Leaves* oblong, obtuse, glaucous, six to nine inches long, one and three-quarters to two and a quarter inches broad. *Scape* erect, pubescent, with dull brownish green hairs, gradually elongating and producing flowers in succession for a long period, recurved at the growing apex, ultimately a foot and a half or more long. *Dorsal* sepal suborbicular, somewhat undulate, an inch and a quarter across, yellowish green with a primrose yellow margin; lateral sepals united into a concave oblong body, rather narrower than the dorsal, hirsute. *Petals* spreading, nearly horizontal, linear-oblong, obtuse, spirally twisted and undulate, strongly ciliate, about an inch and three-quarters long, white, with numerous bright red-purple blotches. *Lip* about an inch and a half long; the pouch inflated, light rose-purple, with darker dots, and a light green margin; side lobes angled. *Staminode* ovate, obtuse, convex, pilose, purple, with a green base.—R. A. Rolfe.

Fig. 1, column, showing the staminode and stigma; 2, the same with half the staminode removed, showing one of the stamens:—*both enlarged*.

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Tab. 8085.

GURANIA malacophylla.

Upper Amazons.

Cucurbitaceæ. Tribe Cucumerineæ.

Gurania, *Cogn. in Bull. Soc. Bot. Belgique*, vol. xiv. p. 239; *DC. Monogr. Phanerog.* vol. iii. p. 678.—Anguria, *Benth. et Hook. f. Gen. Plant.* vol. i. p. 833, *partim.*

Gurania malacophylla, *Barb. Rodr. Pl. Nov. Jard. Rio de Janeiro*, fasc. iv. p. 10, t. 3; ab affini *G. sylvatica*, Cogn., calycis segmentis latioribus reflexis et petalis angustioribus recedit.

"*Planta* alte scandens, ramulis cylindraceis, junioribus viridi-pilosis, adultis glabriusculis, suberoso-sulcatis." *Folia* juniora late ovata, seniora plus minus alte trilobata vel interdum subquinquelobata, omnia breviter acuminata, basi satis profunde emarginata, 4–8 poll. longa, 3–6 poll. lata, margine minute denticulata, supra breviter, subtus longe villosa; petiolus teres, 1–3 poll. longus, longiuscule villosus, supra canaliculatus. *Flores masculi* apice pedunculi 6–16 poll. longi, longe villosi, globoso-capitati. *Calycis* tubus extra dense villosus, intus ellipsoideus, 2 lin. longus; lobi lineari-lanceolati, sub anthesi reflexi, circa 7 lin. longi, 1–1¼ lin. lati, extra dense villosi, intus sparsiuscule pubescentes. *Petala* erecta, obtuse lineari-subulata, 2 lin longa, ⅜ lin. lata, breviter pubescentia, basi intus pilis longioribus moniliformibus munita. *Antheræ* suborbiculares, inferne replicatæ, connectivo lato mutico. *Flores feminei* et fructus ignoti.—*G. eriantha*, E. André in Revue Horticole, 1904, p. 388, cum tab., non Cogn.

The figure is from a specimen communicated in December last by Mr. Ed. André. As the plant has been referred to *G. eriantha*, it seems desirable to mention the chief differences between the two species. The inflorescence of *G. eriantha* is spicate; that of *G. malacophylla* is capitate. The petals of *G. eriantha* are destitute of moniliform hairs, and are only slightly shorter than the suberect sepals; whereas those of *G. malacophylla* have a tuft of moniliform hairs at the base, and are rather less than one-third as long as the reflexed sepals.

Most, if not all, of the species of *Gurania* are diœcious, and it is a curious fact that whereas the male plant is known in all the fifty-seven described species, the female plant is known in no more than nine, or less than one-sixth. It seems probable that the male plants are much more numerous than the female, though the relative inconspicuousness of the female flowers may, no doubt, often cause them to be overlooked.

The genus *Gurania* has not hitherto been represented

in this Magazine. It was separated from *Anguria* by Cogniaux, on account of the linear or narrowly triangular fleshy petals, which are shorter than the sepals, and erect or connivent. The petals of *Anguria* are membranous and suborbicular, and are much larger than the sepals. A good idea of the differences between the two genera may be obtained by comparing t. 5304, *Anguria Warscewiczii*, with the present figure.

Descr.—A tall climber. *Stem* terete, villous in a young state, afterwards nearly glabrous. *Leaves* broadly ovate, or more or less deeply three-lobed, more rarely five-lobed, shortly acuminate, rather deeply emarginate at the base, four to eight inches long, three to six inches broad, minutely toothed, villous on both surfaces; petiole terete, channelled above, one to three inches long, villous. *Male flowers* in a globose head; peduncle six to sixteen inches long, villous with long hairs. *Calyx-tube* densely villous outside, the cavity ellipsoid, one-sixth of an inch long; lobes linear-lanceolate, reflexed, over half an inch long, one-twelfth to one-tenth of an inch broad, densely villous outside, rather sparsely pubescent inside. *Petals* erect, linear-subulate, one-sixth of an inch long, one-thirtieth of an inch broad, shortly pubescent, with a tuft of longer, moniliform hairs at the base. *Anthers* suborbicular, replicate below; connective broad, muticous. *Female flowers* and fruit unknown.—T. A. Sprague.

Fig. 1, margin of leaf; 2, a flower with two of the calyx segments cut away; 3, hair from calyx; 4, longitudinal section of flower with calyx removed, showing stamens:—*all enlarged.*

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Tab. 8086.

GENISTA cinerea.

Western Mediterranean Region.

Leguminosæ. Tribe Genisteæ.

Genista, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 482.

Genista cinerea, *DC. Fl. Franç.* vol. iv. p. 494; *Reichenb. Ic. Fl. Germ.* vol. xxii. tab. 41, fig. 1 et 2; *G. ramosissimæ,* Poir., affinis, sed indumento novellorum et foliorum (subtus) tenuiore adpresso sericeo et pedicellis distinctis diversa.

Frutex 1–3 ped. altus, ramosissimus, ramis virgatis sulcato-striatis gracilibus junioribus magis minusve argenteo-sericeis adultis glabratis ob foliorum pulvinulos persistentes tuberculatis tandem cortice fusco-cinereo tectis. *Folia* sessilia, unifoliolata, sparsa in macrocladiis, dense congesta quasi fasciculata in brachycladiis floriferis, illa lanceolata vel lineari-lanceolata, acuta, circiter ½ poll. longa, ⅛ poll. lata, haec (fasciculorum) multo breviora, oblonga vel obovato-oblonga, obtusa, omnia facie glabra, dorso magis minusve sericea; stipulæ obscuræ. *Flores* plerumque 2, rarius 1 vel ad 4, approximati ad brachycladiorum apices, secundum macrocladia quasi in racemos longos dispositi, 2-bracteolati; pedicelli 1–1½ lin. (in cultis ad 2 lin.) longi; bracteolæ subulatæ, minutæ. *Calyx* persistens. circiter 2 lin. longus, sericeus, labio supero ad basin in dentes triangulari-lanceolatos fisso tubum æquante vel paulo superante, labio infero quam supero longiore breviter 3-dentato. *Corolla* aurea, marcescens, fere semipollicaris; vexillum subrotundum, emarginatum, abrupte in unguem contractum, in dorso medio parce sericeum vel totum glabrum; alæ glabræ; carina obtusa, alis paulo longior, sericea. *Legumen* lanceolato-oblongum, breviter acute acuminatum, ½–⅔ poll. longum, sericeum vel sericeo-villosum, 2–5-spermum. *Semina* reniformi-ovoidea, spadicea vel fusca, nitida.—*Spartium cinereum,* Vill. Prosp. F. Dauph. p. 40.

Genista cinerea is a characteristic constituent of the bush vegetation and the underwood of the forests of the western Mediterranean region. In France it has its northern limit approximately at 45° N. Lat. In Spain it ascends to 6,000 feet in the Sierra Nevada. It has been in cultivation for a very long time, although it does not seem to have received the attention it deserves on account of its copious brilliantly yellow flowers. It flowers at Kew in June.

Descr.—A shrub one to three feet high, with very numerous erect slender grooved branches; all the young parts more or less silvery-silky; old branches tubercled from the persistent leaf-cushions, at length covered with greyish-brown bark. *Leaves* sessile, unifoliolate, scattered on the long-shoots, densely fascicled on the short-shoots

(foliar spurs) which bear the flowers; those of the long-shoots lanceolate to linear-lanceolate, acute, about half an inch long, an eighth of an inch broad, those of the short-shoots much shorter, oblong or obovate-oblong, obtuse, all glabrous above and more or less silky-pubescent below; stipules obscure. *Flowers* usually two, rarely one or up to four, terminal from the short-shoots, bibracteolate; pedicels one-twelfth to one-eighth (in cultivated specimens to one-sixth) of an inch long; bracteoles subulate, minute. *Calyx* persistent, about one-sixth of an inch long, silky; upper lip divided to the base into two acute triangular-lanceolate teeth; lower lip slightly longer, shortly three-toothed. *Corolla* brilliant yellow, persistent and drying up, almost half an inch long; standard subrotund, emarginate, abruptly contracted into the short claw, silky along the middle or quite glabrous; wings glabrous; keel obtuse, slightly exceeding the wings, silky. *Pod* lanceolate-oblong, shortly and acutely acuminate, one-half to two-thirds of an inch long, silky or almost villous, 2–5-seeded. *Seed* reniform ovoid, brown, shining.—Otto Stapf.

Fig. 1, leaf; 2, calyx, stamens, and pistil; 3, pistil; 4, fruit; 5, seed.

M. S. del. J. N. Fitch. lith

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Tab. 8087.

RHODOSTACHYS PITCAIRNIIFOLIA.

Chili.

Bromeliaceæ. Tribe Bromelieæ.

Rhodostachys, *Phil.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 662.

Rhodostachys pitcairniifolia, *Benth. in Benth. et Hook. f. Gen. Plant.* vol. iii. p. 662; *Baker, Handb. Bromel.* p. 28; *R. andinæ,* Phil. (Bot. Mag. t. 7148) affinis; hæc vero foliis angustioribus, petalis carneis differt.

Caulis brevis, apice ramos breves nonnullos gerens. ***Folia*** plura, dense conferta, e basi ovato-triangulari ensiformia, circa 1 ped. longa, basi 1 poll. lata, primum albo-lepidota, demum fere glabra, in marginibus spinis incurvis 4 poll. distantibus instructa, intima facie superiore splendide rubra. *Flores* in capitulo centrali sessili circa 2 poll. diametro dense conferti. *Sepala* anguste lanceolato-acuminata, fere 1 poll. longa, primum extus dense albo-lepidota. *Petala* cœrulea, quam sepala paullo longiora, oblonga, obtusa, erecta, basi intus callis duobus parvis instructa. *Stamina* quam petala paullo breviora; filamenta basi dilatata; antheræ lineares, luteæ, circa 5 lin. longæ; pollinis granulæ læves, 50 μ diam. *Ovarium* oblongum, plano-convexum, parte superiore pubescente; stylus basi incrassatus, quam antheræ dimidio brevior; stigmata tria, brevia.—*Bromelia pitcairniifolia,* C. Koch, Wochenschr. 1868, p. 325, and 1870, p. 149. *B. Joinvillei,* Morren in Belg. Hort. 1876, p. 161, tt. 10–11. *Hechtia pitcairniifolia,* Verlot in Rev. Hort. 1868, p. 211, cum icon. *Billbergia Joinvillei,* Van Houtte, Catal. 1871, n. 138. *Pourretia Joinvillei,* Hort. ex Chatin in Journ. Soc. Centr. Hortic. France, 1871, p. 360. *P. flexilis* and *P. mexicana,* Hort. ex Morren in Belg. Hort. 1876, p. 161. *Fascicularia pitcairniifolia,* Mez in DC. Monogr. Phan. vol. ix. p. 10.

The plant figured flowered for the first time in November last, in the collection of Major W. L. Harvey at Tredarvah, Penzance, having been originally brought from Germany by the late Mrs. Harvey over thirty years ago. There are numerous large plants at Kew, one of which, on the authority of Mr. W. Watson, the Curator, flowered ten to fifteen years ago, but not since. Plants sent from Kew to Tresco are stated by Mr. Dorrien-Smith to flower there annually in the open air. The species first flowered in cultivation in 1866 in M. Luddemann's garden in Paris; since then it has done so at several places on the continent.

As can be seen from the above quoted synonymy, *Rhodostachys pitcairniifolia* has been placed in several different genera. Mez (in *Mart. Flor. Bras.* vol. iii. pars ii. p. 627) constitutes for it a new genus, *Fascicularia,* of which he gives as diagnostic characters, "petalis ligulatis pollineque

insigne," but these appear to us of insufficient value for generic rank.

When in flower, the contrasted colours of the flowers, together with that of the surrounding leaves, make it highly decorative; at other times its densely cæspitose habit and easy cultivation make it a desirable plant in a collection.

Descr.—*Stem* short, thick, bearing several short branches. *Leaves* numerous and crowded, ensiform from an ovate triangular base, about one foot long, one inch wide at the base, almost glabrous when adult, thinly white-lepidote on both sides when young, margins with short, upcurved spines about four lines apart, the innermost bright red on the basal part of the upper surface. *Flowers* in a dense central sessile head about two inches in diameter. *Sepals* nearly an inch long, at first densely white-lepidote outside, narrowly lanceolate-acuminate. *Petals* blue, a little longer than the sepals, oblong, obtuse, erect, bearing two small calli near their base on the inner side. *Stamens* slightly shorter than the petals; filaments dilated below; anthers yellow, linear, about five lines long; pollen subglobose, smooth. *Ovary* oblong, plano-convex, hairy in the upper part; style thickened below, reaching to the middle of the anthers; stigmas three, short.—C. H. Wright.

Fig. 1, bracteole; 2, flower; 3, section of flower; 4, a petal with calli and bases of stamens; 5, apex of style; 6, ovule:—*all enlarged.*

H.T.D. del, J.N. Fitch lith.

Vincent Brooks, Day & Son Lt.d Imp

L. Reeve & Co. London.

Tab. 8088.

BULBOPHYLLUM Ericssoni.

Malay Archipelago.

Orchidaceæ. Tribe Epidendreæ.

Bulbophyllum, *Thouars*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 501.

Bulbophyllum Ericssoni, *Kränzl. in Gard. Chron.* 1893, vol. ii. p. 522; 1897, vol. i. p. 61, fig. 16; a *B. Pahudi*, Reichb. f., sepalis multo latioribus insigniter maculatis differt.

Herba epiphytica, rhizomate repente valido. *Pseudobulbi* distantes, linearioblongi, monophylli, basi vaginis membranaceis obtecti, circa $3\frac{1}{2}$ poll. longi. *Folia* petiolata, elliptico-oblonga, obtusa, subcoriacea, circa 5–6 poll. longa, 2–$2\frac{1}{4}$ poll. lata. *Scapi* suberecti, apice decurvati, circa 6–7 poll. longi, vaginis spathaceis obtecti. *Flores* speciosi, umbellati, virides, purpureo-maculati. *Bracteæ* ovato-lanceolatæ, acuminatæ, $\frac{1}{2}$–$\frac{3}{4}$ poll. longæ. *Pedicelli* 6–8 lin. longi. *Sepalum* posticum late lanceolatum, caudato-acuminatum, $2\frac{3}{4}$–3 poll. longum, 5–7 lin. latum, apice sæpe spiraliter recurvum; sepala lateralia triangularia, apice caudata et spiraliter recurva, $2\frac{3}{4}$–3 poll. longa, basi 5–7 lin. lata. *Petala* basi triangularia, dein longe caudato-attenuata, apice sæpissime torta, $1\frac{1}{2}$ poll. longa, basi circa 4 lin. lata. *Labellum* cordato-triangulare, acutum, recurvum, lateraliter subcompressum, circa 7–8 lin. longum, auriculis rotundatis. *Columna* latissima, circa 3 lin. longa; basi in pedem attenuatum, circa 9 lin. longum extensum; dentes oblongi, obtusi.

Bulbophyllum Ericssoni, Kränzl., is a member of a very small but striking group which, so far as our knowledge extends, is limited to the Malay Archipelago and Peninsula. It was discovered by Mr. Ericsson, a traveller for Messrs. Sander & Sons, and was described from dried specimens in 1893. The flowers were not inaptly compared with those of a large Chimæroid *Masdevallia*, for the general shape, combined with the green ground colour and purple spotting, is more comparable with that group than with anything in its own genus. The habitat, as is too often the case, was not recorded, and although when it flowered some four years later, in the collection of the Hon. Walter Rothschild, M.P., and was figured in the *Gardener's Chronicle*, with the remark that, "it is probably a native of New Guinea," we cannot learn that the remark was more than an inference. The plant here figured flowered in the collection of Sir Trevor Lawrence, Bart., Burford, Dorking, in October, 1899. Mr. White, Sir Trevor's Orchid grower, observed that, "the flowers

close partially at night, and open again in the morning," which has not been noticed in any other species of *Bulbophyllum*.

The other known species of the group are *B. Pahudii*, Reichb. f. (Fl. des Serres, t. 2268), *B. Binnendijkii*, J. J. Smith, both natives of Java; *B. virescens*, J. J. Smith (Ic. Bogor. vol. ii. t. 119, fig. A.), a native of Amboina, and *B. maximum*, Ridl., from Malacca. Of these only *B. virescens* is known to be in cultivation. It has light green, unspotted flowers, of about the same size as those of *B. Ericssoni*.

Descr.—An epiphytic herb, about a foot and a half high, with a stout, creeping rhizome. *Pseudobulbs* distant, linear-oblong, about three and a half inches long, with large, membranous sheaths at the base, one-leaved. *Leaves* petioled, elliptic-oblong, obtuse, subcoriaceous, five to six inches long by two to two and a quarter inches broad. *Scapes* suberect, about six to seven inches high, with a few spathaceous sheaths below, somewhat decurved near the apex. *Flowers* umbellate, large, green, spotted with purple-brown, and with some red-brown markings in front. *Bracts* ovate-lanceolate, acuminate, half to three-quarters of an inch long. *Pedicels* half an inch or more long. *Dorsal sepal* broadly lanceolate, acuminate, two and three-quarters to three inches long, about half an inch broad, often spirally curved at the apex; lateral sepals triangular at the base, with a long, caudate, spirally curved apex, as long as the dorsal sepal, by about half an inch broad at the base. *Petals* narrowly triangular at the base, caudate-attenuate above, and often somewhat twisted, an inch and a half long, by a third of an inch broad at the base. *Lip* triangular from a broadly cordate base, somewhat compressed laterally, and with an acute, strongly recurved apex, over half an inch long. *Column* very broad, about a quarter of an inch long; base attenuated into a narrow foot, about three-quarters of an inch long; teeth oblong, obtuse.—R. A. Rolfe.

Fig. 1, flower from which the sepals and petals have been removed; 2, column attached to pedicel; 3, lip; 4, petal; 5, anther; 6 and 7, pollinia seen from front and side;—*all enlarged*.

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M.S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son Lith. Imp.

Tab. 8089.

BORONIA fastigiata.

Western Australia.

Rutaceæ. Tribe Boronieæ.

Boronia, *Sm.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 291.

Boronia fastigiata, *Bartl. in Pl. Preiss.* vol. i. p. 167; *Regel, Gartenfl.* 1857, p. 147; *Benth. Fl. Austr.* vol. i. p. 326; **a speciebus ceteris sectionis *Pedunculatæ* foliis parvis obovatis distincta.**

Frutex erectus, usque 6 ped. altus, superne fastigiato-ramosus. *Folia* sessilia, obovata, 3–6 lin. longa, 1½–3 lin. lata, apice rotundata vel apiculata, rarius paullo retusa, basi obtuse cuneata vel rotundata, minute denticulata vel subintegra, glabra. *Cymæ* corymbosæ, plurifloræ; pedicelli subangulati, superne incrassati, circa ½ poll. longi. *Sepala* late ovata, breviter acutiuscule acuminata, circa 2 lin. longa, 1–1½ lin. lata, intus minute pubescentia. *Petala* imbricata, obtuse rhomboidea, 3 lin. longa, 2½ lin. lata, rosea, stria dorsali purpurea. *Stamina* subconformia, episepala paullo majora; filamenta applanata, ad apicem sensim angustata, circa 1 lin. longa, longe patenter ciliata, superne dorso glandulifera, ultra insertionem antheræ breviter producta; antheræ oblongæ, muticæ, ½–¾ lin. longæ. *Ovaria* ultra ½ lin. longa, stylis propriis brevissimis, stylo communi circa ½ lin. longo, apice paullo incrassato. *Cocci* truncati, elevato-punctati.—*B. hypericifolia*, Hort. ex Regel, Gartenfl. 1857, p. 152.

Boronia fastigiata is a charming greenhouse plant, which has been in cultivation for at least half a century, but has not hitherto been adequately figured. Planted out in a bed in the Temperate House, it has formed a bush six feet high and four feet through, which was covered with flowers in April, 1905. It was grown at Kew fifteen years ago under the name *Boronia polygalifolia*, and the plant from which our figure is taken was raised from seed received from the Sydney Botanic Gardens in 1899 under the same name. The two species are, however, not very nearly related.

An interesting morphological character of *Boronia* is that the four ovaries are free from each other, though the styles are united for the greater part of their length. It recalls in this respect the structure of Asclepiadaceæ, where the two carpels are, however, united only at the apex of the styles.

Descr.—An erect, fastigiately branched bush, six feet high or less. *Leaves* sessile, obovate, one-quarter to half an inch long, one-eighth to one-quarter of an inch broad, rounded

or apiculate at the apex, occasionally slightly retuse, obtusely wedge-shaped, or rounded at the base, minutely denticulate or nearly entire, glabrous. *Cymes* corymbose, several-flowered; pedicels rather angular, thickened towards the apex, about half an inch long. *Sepals* broadly ovate, shortly acuminate, about one-sixth of an inch long, one-twelfth to one-eighth of an inch broad, minutely pubescent on the inner surface. *Petals* imbricate, obtusely rhomboid, one-quarter of an inch long, one-fifth of an inch broad, rose-coloured, with a purple band on the back. *Stamens* nearly uniform, those opposite the sepals slightly larger; filaments flattened, gradually narrowed to the apex, about one-twelfth of an inch long, long-ciliate, produced for a short distance above the insertion of the anther, the upper part covered with wart-like glands on the back; anthers oblong, muticous. *Ovaries* rather over a twenty-fourth of an inch long; styles free for a very short distance at the base, the common portion about a twenty-fourth of an inch long, slightly thickened at the apex. *Cocci* truncate, dotted.—T. A. Sprague.

Fig. 1, flower from which the petals have been removed; 2 and 3, stamens; 4, pistil; 5, section of pistil:—*all enlarged*.

M. S. del. J. N. Fitch Lith.

Vincent Brooks Day & Son Ltd Imp.

L. Reeve & Co. London.

Tab. 8090.

CODONOPSIS Tangshen.

China.

Campanulaceæ. Tribe Campanuleæ.

Codonopsis, *Wall.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 557.

Codonopsis Tangshen, *Oliv. in Hook. Ic. Plant.* t. 1966; *C. lanceolatæ,* Benth. et Hook. f. affinis, sed petiolis longioribus, foliis tenuioribus plus minusve pubescentibus basi rotundatis, floribus longius pedunculatis et calyce profundius partito vix basi ovario adnato differt.

Herba perennis radice sat longa valde incrassata. *Caules* volubiles, graciles, usque ad 10 ped. longi, laxe ramosi, glaberrimi vel juxta nodos parce pubescentes. *Folia* membranacea, ovata vel ovato-lanceolata, $1\frac{1}{4}$–$2\frac{1}{2}$ poll. longa, $\frac{1}{2}$–$1\frac{1}{4}$ poll. lata, obtusiuscula, basi rotundata vel rare subcuneata, remote crenato-serrata, plus minusve minute setuloso-pubescentia, rarius fere omnino glabrata; petioli gracillimi, sæpe $\frac{1}{2}$–$\frac{3}{4}$ poll. longi. *Pedunculi* usque ad $2\frac{3}{4}$ poll. longi, foliis oppositi vel extra-axillares vel flores ramulos breves terminantes. *Calyx* profunde partitus, fere omnino liber, persistens, segmentis oblongo-lanceolatis 6-10 lin. longis 2–$3\frac{1}{2}$ lin. latis acutis vel obtusiusculis. *Corolla* campanulata, $1\frac{1}{4}$ $1\frac{1}{2}$ poll. longa, viridescens, intus purpureo-punctata et purpureo-lineata; lobi 5, late deltoidei, acuti, circiter $\frac{1}{4}$ poll. longi. *Capsula* subglobosa, 1 poll. diam., basi calyce deflexo appendiculata.

Codonopsis includes eighteen species, all Asiatic, and chiefly natives of the Himalayan region, where ten are found. *C. rotundifolia,* Royle, was figured at t. 4942 of this work, and the variety *grandiflora* at t. 5018. *C. cordata,* Hassk. (t. 5372) is now referred to *Campanumœa,* which chiefly differs from *Codonopsis* in having a baccate instead of a capsular fruit.

The species here figured is of interest on account of its root yielding a drug in very common use as a tonic among the Chinese, to whom the plant is known as the "T'ang-shên" (Bastard Ginseng). Mr. E. H. Wilson, who collected seeds and specimens for Messrs. James Veitch & Sons, states that it is common in thickets on the mountains of Hupeh and Szechuen, between 5,000 and 8,000 feet. It is found also in Shensi and Shansi. The annual exports of the drug from Hankow to other parts of China amount to some 9,000 piculs—about 1,200,000 lbs.

The figure was prepared from specimens received from Messrs. James Veitch & Sons in August, 1903. A plant

obtained from the same source is growing in the Rockery at Kew.

Descr.—A perennial herb with a rather long, much-thickened root. *Stems* twining, slender, up to ten feet long, loosely branched, quite glabrous, or sparingly pubescent near the nodes. *Leaves* ovate or ovate-lanceolate, an inch and a quarter to two inches and a half long, half an inch to an inch and a quarter wide, rather obtuse, rounded, or rarely somewhat cuneate at the base, remotely crenate-serrate, more or less minutely pubescent, rarely becoming quite glabrous; petioles very slender, usually half to three-quarters of an inch long. *Peduncles* up to two inches and three-quarters long, opposite to the leaves or extra-axillary, or the flowers sometimes terminating short branches. *Calyx* deeply cleft, almost quite free, persistent; segments oblong-lanceolate, half to about three-quarters of an inch long, a sixth to nearly a third of an inch wide, acute, or somewhat obtuse. *Corolla* campanulate, an inch and a quarter to an inch and a half long, greenish, purple-spotted and -striped inside; lobes broadly deltoid, acute, about a quarter of an inch long. *Capsule* subglobose, an inch across, appendaged at the base with the deflexed calyx.—S. A. Skan.

Fig. 1, section of the flower with the corolla removed; 2 and 3, anthers; 4, stigma:—*all enlarged*.

M.S. del. J.N.Fitch lith.

Vincent Brooks, Day & Son Lith. Imp

L. Reeve & Co. London

Tab. 8091.

HEDYSARUM MULTIJUGUM, *var.* APICULATUM.

Central Asia.

Leguminosæ. Tribe Hedysareæ.

Hedysarum, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 510; *Fedtsch. in Bull. Herb. Boiss.* Ser. i. vol. vii. p. 254.

Hedysarum multijugum, *Maxim. in Bull. Acad. Sci. St. Pétersb.* vol. xxvii. p. 464, var. **apiculatum,** *Sprague*, var. nov.; a typo foliolis paucioribus **apiculatis supra glabris recedit.**

Frutex usque 4 ped. altus, e basi ramosus, ramis ascendentibus basi 1 poll. diametro vel ultra, ramulis fastigiatis gracilibus flexuosis leviter costatis ut folii rhachi et inflorescentia minute appresse pubescentibus. *Folia* 3–6 poll. longa, 8–13-juga, rhachi supra excavata; foliola elliptico- vel ovato-oblonga, acute apiculata, $2\frac{1}{2}$–9 lin. longa, $1\frac{1}{2}$–4 lin. lata, supra glabra, subtus minute appresse pubescentia. *Stipulæ* deltoideæ, acuminatæ, 2–3 lin. longæ. *Racemi* $\frac{1}{2}$–1 ped. longi, 9–25-flori; pedicelli 1 lin. longi; bracteæ subulatæ, extra pilosæ, circa 1 lin. longæ; bracteolæ bracteis conformes, minores. *Calyx* postice ultra medium spathaceo-fissus, extra minute appresse pubescens, circa 3 lin. longus; dens anticus usque ad 1 lin. longus, ceteri ei subæquales vel obsoleti. *Vexillum* suborbiculare, retusum, circa 7 lin. diametro, ungue 1 lin. longo. *Alæ* inæquales, ad apicem attenuatæ, 3–$4\frac{1}{2}$ lin. longæ. *Carinæ* segmenta 5 lin. longa, vix 3 lin. lata, unguibus 3 lin. longis exclusis. *Vagina staminalis* circa 6 lin. longa. *Ovarium* sericeo-pubescens, stipite circa 3 lin. longo.

The variety *apiculatum* has been grown at Kew for many years, and its origin is now unknown. It differs in several respects from the typical wild form represented in the Kew Herbarium. The leaflets are fewer and larger; they are apiculate, instead of being obtuse or retuse, and are glabrous on the upper surface. The calyx is more distinctly spathaceous, and sometimes has only the anticous tooth clearly developed, the remaining ones being obsolete. Finally, the ovary is longer stipitate than in the typical form.

There is a fine bed of *H. multijugum*, var. *apiculatum*, close by the Refreshment Pavilion. Owing to the fastigiate character of the branching, a large number of racemes are often produced at the same level on a single bush, and the result is very effective. Flowering commences in June, and lasts into July.

Descr.—A shrub, four feet high or less. *Branchlets* fastigiate, slender, flexuous, very slightly ribbed, minutely

appressed-pubescent, as are also the leaf rhachis and inflorescence. *Leaves* up to six inches long, with from eight to thirteen pairs of leaflets; leaflets elliptic-oblong or ovate-oblong, sharply apiculate, one to three-quarters of an inch long, one-eighth to one-third of an inch broad, glabrous on the upper surface, appressed-pubescent on the lower. *Stipules* deltoid, acuminate, up to one quarter of an inch long. *Racemes* six inches to one foot long, bearing from nine to twenty-five flowers. *Bracts* and bracteoles subulate, the former about one-twelfth of an inch long. *Calyx* spathaceously split at the back, about one-quarter of an inch long, appressed-pubescent outside, the anticous tooth one-twelfth of an inch long or less, the remaining ones more or less reduced. *Standard* suborbicular, retuse, rather over half an inch in diameter, the claw one-twelfth of an inch long. *Wing-petals* unequal, equalling or but little exceeding the calyx. *Keel-petals* two-thirds of an inch long, hardly one-quarter of an inch broad. *Ovary* more or less silky-pubescent, stipitate about one-quarter of an inch.—T. A. SPRAGUE.

Fig. 1, flower with petals removed; 2, wing and keel-petals; 3, pistil:—*all enlarged.*

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M.S. del, J.N. Fitch lith.

Vincent Brooks, Day & Son Lt.h Imp

L. Reeve & Co. London.

Tab. 8092.

FICUS Krishnæ.

India.

Urticaceæ. Tribe Artocarpeæ.

Ficus, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 367.

Ficus Krishnæ, C. DC.; species *F.* (*Urostigmati*) *bengalensi*, Linn., proxima, stigmate tamen majore, perigonii phyllis obtusis, antherarum connectivo obtuso, stipulis longioribus extus villosis, foliis subtus minute velutinis differt; foliorum laminis hypoascidiformibus insignis.

Arbor parva. *Ramuli* hirtelli. *Folia* longe petiolata; stipulæ oblongo-triangulæ, apice acute acuminatæ, extus pubescentes, usque ad 2 poll. longæ; petiolus teres, parce hirtellus, usque ad 3·5 poll. longus; limbus circiter 5 poll. longus, 3 poll. latus, hypoascidiformis, id est in ascidium faciem dorsalem limbi includens conformatus, labro superiore basi 7-nervio ejusque nervo centrali nervos laterales subadscendentes utrinque 3 mittente, labro inferiore quam superiore multo breviore integro vel varius emarginato 5-nervio. *Receptacula* axillaria, sessilia, geminata, androgynia, bracteis 3 rotundatis et basi cordatis fulta, globosa, velutino-puberula, diametro fere 7 l. crassa. *Flores masculi* pedicellati, monandri; perigonium 3-phyllinum, phyllis ellipticis apice obtusis; anthera subsessilis, ovata, phyllis paullo brevior, connectivo supra thecas producto obtuso subacutove. *Flores feminei* sessiles vel interdum pedicellati; perigonium 4-phyllinum phyllis ovato-oblongis superne lacinulatis et apice acutis; ovarium ovatum vel subglobosum; stylus gracilis, ovarium æquans, apice stigma fere aequilongum tenuiter membranaceum oblongo-ellipticum basi subpeltatum et apice acutum gerens.—Vulgo *Krishna Bor.*—C. de Candolle.

This striking plant was brought to the writer's notice ten years ago by a native of Bengal. The branch submitted for inspection came from a private garden in the neighbourhood of the Royal Botanic Garden, Calcutta. An attempt to obtain rooted cuttings from this branch did not succeed. The owner of the tree would not say whence it came or how old it was, and there was a difficulty as to securing a second branch. This was at length overcome, and two cuttings were eventually reared. One of the resulting plants was placed in the public collection in the Calcutta Garden; the second was employed in propagating examples for distribution.

The plate is from one of these which reached Kew in 1902, where it has been grown in a Tropical House. It formed receptacles for the first time in 1905. Another, sent from Calcutta to Mr. C. de Candolle, at Geneva, also

formed receptacles in 1905 at Vallon, near that city. From this the diagnosis now provided by Mr. de Candolle was prepared. One of the plants in the Calcutta Garden formed receptacles for the first time in 1903.

Mr. de Candolle has already discussed very fully the history and the morphology of this plant. The peculiarity of its leaves has led those natives of India who have seen it to invest the tree with a sacred character, and to provide more than one circumstantial legend in explanation of its appearance. Various localities have been suggested by them as its original home; these localities have always been some well-known place of pilgrimage. Inquiries on the spot have, however, hitherto failed to produce evidence that the tree exists in any of them; its original habitat is therefore as yet unknown.

One Indian view is that the tree is a Bor or Banyan (*Ficus bengalensis*) miraculously modified by Rama. The tale has been told by Mr. de Candolle in the *Archives des Sciences Physiques et Naturelles*, ser. iv. vol. xii., for December, 1901. But apart from the peculiar form of the leaves, the differences as regards the tomentum, the stipules, the perianth, the stamens and the stigma are too great to admit of the identification with *Ficus bengalensis*. Expecting to find in this plant no more than a modified form of some already described species, Sir G. King, Mr. de Candolle and the writer, after a careful search in the herbaria of Kew, Geneva and Calcutta, have been unable to refer *F. Krishnæ* to any species of *Ficus* with normal foliage. The native Indian view has, however, this to be said for it; *F. Krishnæ*, like *F. bengalensis*, belongs to the section *Urostigma*, and is more nearly allied to *F. bengalensis* than to any other species in that section. What is perhaps as interesting as the accuracy of native intuition with regard to the natural affinities of the plant, is the fact that the Rama legend alluded to above, though first in the field, failed to satisfy every one, and a second legend, associating the tree, still as a Banyan or Bor, with Krishna, soon obtained a wider circulation than the other. This story has also been told by Mr. de Candolle in the *Bulletin de l'Herbier Boissier* for 1902, p. 760. The first legend, it may be remarked, originated after the two original cuttings had become established in the nurseries of the Calcutta

Garden, but before either had been placed in the public collection. The second legend became current after one of the two was planted out. Although cup-shaped leaves are occasionally to be met with in other plants, the inside of the cup is in these formed by the upper side of the leaf; *F. Krishnæ* is the only species so far known in which the converse condition prevails.

Descr.—A small tree, with grey bark. *Branchlets* puberulous. *Leaves* cup-shaped with the upper surface of the leaf outside, the limb of the cup irregular with its upper side, containing the midrib which gives off 4-5 pairs of lateral nerves looping some way from the obscurely undulate margin, thrice as long as the 5-nerved entire or emarginate lower side; length 3·5 in., width across limb 3 in., petiole terete sparingly pubescent as is the inside of the cup (lower side of leaf); stipules oblong-triangular, sharply acuminate, externally sparsely pubescent, 2·5–3·5 in. long. *Receptacles* axillary, sessile, geminate, androgynous, with 3 rounded slightly cordate bracts, globose, velvety-puberulous; diam. 6-7 lin. *Male flowers* pedicellate; perianth segments 3, elliptic, obtuse; stamen solitary, anther subsessile ovate rather shorter than perianth-segments; connective slightly produced obtuse or subacute at the tip. *Female flowers* sessile or occasionally pedicellate; perianth segments 4, ovate-oblong lacinulate above and acute at the tip; ovary ovate or subglobose; style slender as long as the ovary; stigma terminal almost as long as the style, thinly membranous, oblong elliptic, subpeltate at the base and acute at the apex.—D. Prain.

Fig. 1, portion of under surface of leaf; 2, ditto, upper surface; 3 and 4, receptacles; 5, section of a receptacle; 6, a male flower and two gall-flowers; 7, an anther:—*all enlarged.*

M.S. del, J.N. Fitch lith.

Vincent Brooks, Day & Son Ltd Imp

L. Reeve & Co. London.

Tab. 8093.

CATASETUM GALERITUM, *var.* PACHYGLOSSUM.

Brazil.

ORCHIDACEÆ. Tribe VANDEÆ.

CATASETUM, *Rich.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 551; *Rolfe in Journ. Linn. Soc.* vol. xxvii. p. 206.

Catasetum galeritum, *Reichb. f.* var. **pachyglossum**, *Reichb. f. in Gard. Chron.* 1889, vol. i. p. 73; *Cogn. in Mart. Fl. Bras.* vol. iii. pars 5, p. 398; ab typo labelli lobo intermedio orbiculari vel fere quadrato obtusangulato et crassissimo differt.

Herba epiphytica, cæspitosa. *Pseudobulbi* ovoideo-oblongi, 3-5 poll. longi, vaginis imbricatis membranaceis tecti. *Folia* petiolata, oblongo-lanceolata breviter acuminata, plicata, 6–12 poll. longa, 1–1½ poll. lata. *Scapi* suberecti, apice arcuati, circa 1 ped. longi, circa 8–12-flori. *Flores*, masculi solum noti, speciosi. *Bracteæ* ovato-lanceolatæ, acuminatæ, 4–5 lin. longæ. *Pedicelli* ¾–1 poll. longi. *Sepala* lanceolata, acuminata, circa 1-1¼ poll. longa, viridia, purpureo-maculata, posticum erectum, lateralia patentia. *Petala* suberecta, lanceolata, acuminata, viridia, purpureo-maculata, cum sepalo dorsali subconniventia, et ei æquilonga. *Labellum* inferum, trilobum, crasse carnosum, 1–1¼ poll. longum; lobi laterales oblongi, erecti, lobus intermedius orbicularis vel fere quadratus, obtusus, crassissimus; saccus oblongus, antice productus et conicus, obtusus. *Columna* clavata, rostrata, circa 1 poll. longa; antennæ graciles, incurvæ, in saccum descendentes.

Catasetum galeritum, Reichb. f., is a very rare species which was introduced from the Upper Amazon region by the late Mr. E. S. Rand, of Para, and was described in 1886 by Reichenbach. Three years later the variety *pachyglossum*, Reichb. f., was described, from a plant which flowered in the collection of Sir Trevor Lawrence, Bart., at Burford, Dorking. It was said to differ from the type in having the front lobe of the lip nearly square, exceedingly thick, and obtuse-angled, with very thick borders underneath, leaving a groove in the middle. This plant is, fortunately, still alive, and from it the annexed plate has been prepared, from materials sent by Sir Trevor in February last. The type we only know from description and a figure (*Lindenia*, vol. ii. t. 67), showing the flowers to be much less blotched with brown, and the lip less distinctly three-lobed, conical and pointed in front. Nothing further is known about its history, but presumably it was introduced from the same region as the type.

SEPTEMBER 1ST, 1906.

The female flowers, as in so many other species of this remarkable genus, are unknown, though they might appear at any time on the same plant, as in the case of allied species.

Descr.—A tufted epiphytic herb, about a foot and a half high. *Bulbs* ovoid-oblong, three to five inches long, clothed with membranous imbricating sheaths. *Leaves* stalked, oblong-lanceolate, shortly acuminate, plicate, six to twelve inches long by an inch to an inch and a half wide. *Scape* nearly erect at the base, arching above, about a foot long, with about eight flowers, of which the males only are known. *Bracts* ovate-lanceolate, acuminate, over a third of an inch long. *Pedicels* slender, nearly an inch long. *Sepals* lanceolate, acuminate, about an inch to an inch and a quarter long, green blotched with purple, the upper erect, the lateral pair spreading. *Petals* nearly erect, lanceolate, acuminate, green blotched with purple, about as long as the dorsal sepal and connivent with it. *Lip* three-lobed, very thick and fleshy, an inch to an inch and a quarter long; side lobes erect, oblong, rounded at the base, deep red-brown at the margin, green spotted with brown underneath; front lobe orbicular or nearly quadrate, obtuse and very thick, bright yellow; sac oblong, produced in front into a conical obtuse apex. *Column* club-shaped, an inch long, with a pair of slender curved cirrhi ("antennæ") descending into the sac.—R. A. Rolfe.

Fig. 1, part of the lip; 2, anther-cap; 3, pollinarium; 4, sketch of whole plant:—1, 2 and 3 *enlarged; 4 much reduced.*

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M.S. del. J.N. Fitch Jth.

Vincent Brooks, Day & Son Lt.d Imp.

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Tab. 8094.

RIBES viburnifolium.

Lower California and Santa Catalina Island.

Saxifragaceæ. Tribe Ribesieæ.

Ribes, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p 654.

Ribes viburnifolium, *A. Gray in Proc. Amer. Acad.* vol. xvii. p. 202; species distinctissima, sempervirens, resinoso-punctata, foliis ovato-orbicularibus vel ovato-ellipticis nec cordatis nec plicatis coriaceis, floribus parvis et calyce brevissimo.

Frutex sempervirens, diffuse ramosus, dense resinoso-punctatus, novellis parce pilosis. *Folia* sat conferta, petiolata, coriacea, nitida, ovato-orbicularia, vel ovato-elliptica, $\frac{3}{4}$–$1\frac{3}{4}$ poll. longa, $\frac{2}{3}$–$1\frac{1}{3}$ poll. lata, utrinque rotundata, supra medium breviter dentata vel rarius leviter lobata, interdum subtus basi parce pilosa; petioli $\frac{1}{6}$–$\frac{1}{2}$ poll. longi, graciles, breviter pilosi. *Racemi* terminales, corymbiformes, 1–$1\frac{1}{4}$ poll. longi, laxiflori, breviter pilosi; bracteæ et bracteolæ scariosæ, caducæ; pedicelli filiformes, circiter $\frac{1}{3}$ poll. longi. *Calycis* rosei tubus primum turbinatus, demum ellipsoideus, basi parce pilosus; limbus patens, lobis suborbicularibus circiter 1 lin. diam. *Petala* minima, viridescentia, late obovata vel subquadrata. *Stamina* 5, calycis lobis breviora, ut petala margini disci lati plani inserta. *Stylus* staminibus paulum brevior, 2-fidus. *Baccæ* rubræ, ellipsoideæ, circiter $\frac{1}{4}$ poll. longæ, $\frac{1}{6}$ poll. latæ, parce resinoso-punctatæ.

This well-marked species was originally described from material collected near All Saints' Bay (Todos Santos Bay) in the northern part of Lower California. It is "so peculiar," Gray says, that the acute collectors did not recognize the genus. Yet the flowers have all the characters of the *Ribesia* section, and the conspicuous glands of the leaves, young shoots, pedicels, &c., are just like those of *R. nigrum*." In the Kew Herbarium are specimens from Santa Catalina Island, Southern California, collected by Mrs. Blanche Trask, who states that the species is frequent on moist slopes and in cañons.

The Kew plant which supplied the material for the accompanying plate was raised from seeds collected in Santa Catalina Island, and received from the Harvard Botanic Garden in 1897. It is trained on a south wall in the Herbaceous Department, and has now reached a height of 7 feet. It flowers early in March. The berries persist to the succeeding year.

Descr.—A straggling evergreen shrub, densely resin-dotted, sparingly pubescent on the young branches.

Leaves somewhat crowded, petioled, leathery, shining, ovate-orbicular or ovate-elliptic, three quarters to an inch and three-quarters long, two-thirds to an inch and one-third broad, rounded at apex and base, shortly toothed or rarely slightly lobed above the middle, sometimes sparingly pilose on the under side at the base; petioles a sixth to a half inch long, slender, shortly pilose. *Racemes* terminal, corymb-like, an inch to an inch and a quarter long, loosely-flowered, shortly pilose; bracts and bracteoles scarious, caducous; pedicels slender, about a third of an inch long. *Calyx* rose-coloured; tube about a tenth of an inch long, at first top-shaped, afterwards ellipsoid, sparingly pilose at the base; limb spreading; lobes sub-orbicular, about a twelfth of an inch in diameter. *Petals* very small, greenish, broadly obovate or subquadrate. *Stamens* five, shorter than the calyx-lobes, inserted with the petals on the margin of a broad flat disk. *Style* somewhat shorter than the stamens, bifid. *Berries* red, ellipsoid, about a quarter of an inch long and a sixth of an inch broad, sparingly resin-dotted.—S. A. Skan.

Fig. 1, portion of a leaf showing the under side; 2, flowers; 3, pistil:—*all enlarged.*

M.S. del. J.N. Fitch lith.

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Tab. 8095.

LINOSPADIX Micholitzii.

New Guinea.

Palmæ. Tribe Areceæ.

Linospadix, *Becc.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 903.

Linospadix Micholitzii, *Ridley in Gard. Chron.* 1895, ii. p. 262; a speciebus reliquis spicis unisexualibus differt.

Acaulescens. *Folia* dense conferta, longe obcuneata, 2–3½ ped. longa, 7 poll. lata, ad tertiam partem bilobata, lobis acutis, nervis lateralibus circa 14 prominentibus subtus brunneo-furfuraceis; petiolus plano-convexus. *Spadices* graciles, nutantes, unisexuales; pedunculi 1½–2½ ped. longi. *Flores* ♂: sepala vix 1 lin. longa, ovata, ciliata, carina minute denticulata; petala oblonga, acuta, valvata, 2 lin. longa; filamenta subulata, e basi incrassata; antheræ dorsifixæ. *Flores* ♀: sepala ovalia, obtusa, ciliata; ovarium 1-loculare; ovula solitaria, pendula; stigmata tria, lata, recurvata. *Fructus* oblongus, ruber, 6 lin. longus; albumen album.

The genus Linospadix now contains 8 species, 7 of which are natives of New Guinea, while the eighth, *L. petrickiana*, Hort. Sander (*Gard Chron.* 1898, vol. ii. p. 298) is only known in cultivation. To these are added in Engler and Prantl's *Pflanzenfamilien*, vol. ii. 3, p. 67, the two Australian species of *Bacularia*, which differ in having præmorse leaf-segments and basifixed anthers.

The present species is remarkable for having unisexual spadices, instead of the flowers in groups of three with the central one female and the lateral male, although sometimes a rudimentary female is at the side of the male. It was discovered by Mr. Micholitz in wet ravines on the higher slopes of the mountains in New Guinea. Seeds were sent to Messrs. Sander and Sons, of St. Albans, who raised plants, one of which they sent to Kew in 1896, where female flowers were produced in the Victoria House in November, 1905; the males not appearing until January, 1906.

Descr.—A stemless palm. *Leaves* densely congested, long obcuneate, two to three and a half feet long, seven inches across at the widest part, bilobed about a third of the way down; lobes acute; lateral nerves prominent, about fourteen on each side, brown furfuraceous beneath; petiole plano-convex. *Spadices* slender, nodding, unisexual;

peduncles one and a half to two and a half feet long. *Male flowers:* sepals nearly one line long, ovate, ciliate, minutely toothed on the keel; petals oblong, acute, valvate, two lines long; filaments subulate from an almost globose base; anthers dorsifixed. *Female flowers:* sepals oval, obtuse, ciliate; ovary one-celled; ovules solitary, pendulous; stigmas three, broad, recurved. Fruit oblong, bright red, half an inch long; endosperm white.—C. H. WRIGHT.

Fig. 1, whole plant; 2, male inflorescence; 3, two flower buds; 4, male flower; 5, female inflorescence; 6, female flower; 7, pistil:—1 *reduced*, 2 and 5, *natural size, the others enlarged.*

M.S.del. J.N.Fitch lith.

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Tab. 8096.

CEREUS Scheerii.

Mexico.

Cactaceæ. Tribe Echinocacteæ.

Cereus, *Haw.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 849.

Cereus Scheerii, *Salm-Dyck, Cact. Hort. Dyck*, p. 190; *Labouret Monogr. Cact.*, p. 317; affinis C. cinerascenti, DC., sed rigidior, areolis vix elevatis et magis confertis differt.

Planta succulenta, laxe caespitosa, 6 poll. alta. *Caules* erecti, 1–1⅓ poll. crassi, 6–7-angulati, recti vel torti, glaucescenti-virides; anguli acutati, vix tuberculati; areolæ parvæ, confertæ, minute tomentosæ; aculeæ rectæ, exteriores 8–12, radiantes, interiores solitariæ, porrectæ. *Flores* laterales; tubus circa 2½ poll. longus, pulvillis 50–60 setas albas 4–12 gerentibus instructus; limbus 3 poll. diam., pulchre kermesino-roseus; petala lanceolata, acuta. *Stamina* tubo subæquilonga; filamenta pallide lutea; antheræ rubræ. *Stylus* exsertus, viridis; stigma 10–12 partitum. *Echinocereus Scheeri*, Lemaire, Les Cact. p. 57; K. Schum. Monogr. Cact. p. 253, fig. 48. *E. Scheerii*, Rümpl. in Först. Handb. Cact. ed. 2, p. 801.

This pretty species belongs to the same group as the well-known *C. cinerascens*, DC., *C. procumbens* (B. M. t. 7205), *C. pentalophus* (B. M. t. 3651) and *C. mojavensis* (B. M. t. 7705), all of which are dwarf and more or less tufted plants, with large brilliantly coloured flowers. *C. Scheerii* was discovered by Mr. J. Potts near Chihuahua in Mexico and sent by him to Mr. Frederick Scheer of Kew, some time prior to 1850. The plant here figured flowered at Kew in 1900 and during the two succeeding years, but subsequently died.

Descr.—*Plant* laxly tufted, about six inches high. *Stems* erect, one to one and a quarter of an inch thick, six to seven angled, straight or twisted, dull glaucous-green; angles acute; spine-cushions small, scarcely prominent, closely placed, minutely tomentose; spines short, straight, the eight to ten outer radiating, one central directed outwards. *Flowers* produced at the side of the stems, bright carmine-rose more or less flushed with mauve; tube about two and a half inches long, with fifty to sixty spine-cushions bearing four to twelve white bristle-like spines scattered along it, but more crowded upon the ovary; limb spreading, about three inches in diameter; petals

lanceolate, acute. *Stamens* about as long as the tube; filaments pale yellow; anthers red. *Style* exserted, green, stigma ten to twelve partite.—N. E. Brown.

Fig. 1, a spine-cushion, *enlarged*.

Note.—Frederick Scheer was an independent botanist who for some time resided at Kew and particularly devoted himself to the study of *Cactaceæ*. He published in 1840 an excellent account of Kew under the title of "Kew and its Gardens." This and other actions were largely effective in averting the breaking up of the collections which had been contemplated, and in their being taken over by the nation from the Crown. (See *Kew Bulletin*, 1891, pp. 324-5, and an obituary notice in the *Journal of Botany*, 1869, p. 268).—W. T. T.-D.

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M.S. del, J.N. Fitch lith.

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Vincent Brooks, Day Son L.ts Imp

Tab. 8097.

ODONTOGLOSSUM NÆVIUM.

Colombia.

Orchidaceæ. Tribe Vandeæ.

Odontoglossum, *H. B. et K.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 561.

Odontoglossum nævium, *Lindl. in Paxt. Fl. Gard.* vol. i. p. 87, t. 18; *Fol. Orch. Odont.* p. 2 (excl. var. majus); *Fl. des Serres*, t. 594; *Pescatorea*, t. 13; *Warn. Sel. Orch.* vol. i. t. 7; *Regel Gartenflora*, t. 791; *Batem. Monogr. Odont.* t. 9; aff. *O. glorioso*, Lind. & Reichb. f., sed racemo simplici, segmentis undulatis et labelli lobis lateralibus subhastatis differt.

Herba epiphytica, cæspitosa. *Pseudobulbi* ovoideo-oblongi, subcompressi, circa 2–3 poll. longi, apice diphylli, basi circa 4-phylli. *Folia* elongato-ligulata, acuta, subcoriacea, 6–18 poll. longa, $\frac{1}{2}$–$\frac{3}{4}$ poll. lata. *Scapi* axillares, suberecti vel arcuati, circa $\frac{3}{4}$–$1\frac{1}{4}$ ped. longi, racemosi, multiflori. *Bracteæ* ovato-oblongæ, acutæ, concavæ, circa 3 lin. longæ. *Pedicelli* graciles, $\frac{3}{4}$–1 poll. longi. *Flores* speciosi, albi, atropurpureo-maculati, labelli disco flavo. *Sepala* patentia, anguste lanceolata, acuminatissima, incurva, undulata, circa $1\frac{1}{2}$ poll. longa. *Petala* sepalis similia, paullo breviora. *Labelli* unguis erectus, latus; limbus reflexus, hastato-ovatus, acuminatissimus, undulatus, incurvus, sepalis paullo brevior, basi velutinus; crista bilamellata, lamellis erectis dentatis. *Columna* clavata, 4 lin. longa, alis cirrhatis curvatis.

The history of this distinct and handsome species has been sadly confused. It was originally figured and described by Dr. Lindley in 1850 from a plant which was exhibited at one of the spring meetings of the Horticultural Society, and which is said to have been sent to England several years before by Sir R. Schomburgk, but this is very doubtful, considering its habitat. There is, however, a flower and coloured sketch in Lindley's Herbarium labelled, "Rollissons, June, 1847," and this Lindley considered to be a variety, but he also added a specimen collected by Funck & Schlim at San Lazaro and La Pena, in the province of Truxillo, in Venezuela, having yellow flowers spotted with crimson, which belongs to *O. odoratum*, Lindl. Shortly afterwards he added a variety *majus*, from a specimen collected by Linden at 8,000 feet altitude in the province of Pamplona, Colombia, which belongs to *O. gloriosum*, Lind. & Reichb. f. A similar confusion of species occurs in "Pescatorea," where the species was figured, though a note that it was met with by Mr. Schlim

in the mountains near Santa Martha, and that plants were introduced to cultivation, gives a clue to the true habitat, and it is from this locality that it was re-introduced to cultivation, after being almost lost sight of for many years.

The plant figured flowered in a Temperate Orchid House at Kew in February last; its usual time of flowering, though not constant, is during the winter and spring months.

Descr.—A tufted, epiphytic herb, a foot to a foot and a half high. *Bulbs* ovoid-oblong, somewhat compressed, about two to three inches long, with about four basal and two apical leaves. *Leaves* elongate-ligulate, acute, somewhat coriaceous, about six to eighteen inches long by half to three-quarters of an inch broad. *Scapes* axillary, erect or somewhat arched, about nine to fifteen inches long, racemose, many-flowered. *Bracts* ovate-oblong, acute, concave, about a quarter of an inch long. *Pedicels* slender, three-quarters to an inch long. *Flowers* white, with numerous dark purple blotches and a bright yellow disc to the lip. *Sepals* spreading, narrowly lanceolate, very acuminate, incurved, undulate, about an inch and a half long. *Petals* very similar to the petals, but rather shorter. *Lip* with a broad, erect claw; limb reflexed, hastate-ovate and velvety at the base, very acuminate, undulate and incurved at the apex, rather shorter than the sepals; crest consisting of a pair of nearly parallel, erect, somewhat toothed plates. *Column* club-shaped, about a third of an inch long, with a pair of slender, curved wings.—R. A. Rolfe.

Fig. 1, base of lip and column; 2, anther cap; 3 and 4, pollinarium, seen from front and back:—*all enlarged.*

M S del, J N Fitch lith

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Tab. 8098.

ABIES Mariesii.

Japan.

Coniferæ. Tribe Abietineæ.

Abies, *Link*: *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 441.

Abies Mariesii, *Masters in Gard. Chron.* Dec. 20th, 1879, p. 788, fig. 129; *et in Journ. Linn. Soc.* xviii. (1881), 519 *ic. repet.*; *Mayr Monogr. Abietin. Japan.* (1890), p. 40, t. 2, f. 5. Species cum *A. brachyphylla* sociata, differt tamen novellis fusco-hirsutis, canalibus resiniferis sub epidermide positis; strobilis cupiformibus, squamis integris, bracteis acuminatis demum laceratis.

Arbor excelsa, coma pyramidali, ramis patentibus infimis decumbentibus cicatricibus circularibus notatis, ramulis ferrugineo-hirsutis demum glabrescentibus. *Folia* caulina conferta, appressa, ramea multiseriata, horizontalia, lateralia patentia, mediana ramulis sterilibus appressa apicem spectantia vel in ramulis fertilibus ascendentia, omnia glabra, subtus glaucescentia, lineari-oblonga, basi in petiolum brevissimum tortum angustata, apice emarginata, costa superne depressa subtus prominente, margines revolutæ; canales resiniferi duo sub epidermide prope margines foliorum dispositi. *Strobili* violaceo-purpurei, cylindrati, medio autem parum dilatati, apice obtusi. *Squamæ* suborbiculares, integræ, juventute ferrugineo-tomentosæ, basi cuneatæ. *Bracteæ* inclusæ, squamis multo breviores, oblongo-obovatæ, ad basin angustatæ, apice breviter acuminatæ, acumine demum delapso marginibusque laceratis. *Seminis* ala cuneato-obovata, squamam fere æquans.

This handsome silver fir was first discovered in the mountains of northern Japan by the late Mr. Charles Maries, who introduced it to the nurseries of Messrs. James Veitch and Sons of Coombe Wood. In the recently published "Hortus Veitchii" the tree is mentioned as occurring on Mt. Hakkoda, near Aomori, at an elevation of 4,000–5,000 feet, and in Nikko at a greater elevation, but sparingly. It is an "alpine tree with a comparatively restricted habitat, occupying a geographical position between that of *A. Veitchii* and *A. sachalinensis*." Mr. Maries noted that the species grew in company with *A. Veitchii* in shallow, peaty soil, overlying volcanic debris. It differs from *A. webbiana*, to which it had been conjecturally referred, in the hairy shoots, denser, shorter, less horizontally spreading leaves, and the shorter, cask-shaped cones.

The tree from which the figure was made is growing on

the estate of the Earl of Elgin, Dumphail, near Nairn. The specimens were forwarded to Kew by Messrs. D. Stalker & Son. It is believed to be the first occasion on which this Japanese Silver Fir has produced cones in this country.

Descr.—A tall, pyramidal tree, with robust, spreading branches like those of *A. nordmanniana*; younger branches covered with a coarse, brownish, hairy epidermis, which peels off in chaff-like scales; older glabrous, marked with circular scars, pulvini only slightly prominent. Leaves on main branches multiseriate, appressed and evenly disposed around the stem; pseudo-4-ranked on younger sterile ones, lateral leaves spreading, those on upper surface appressed parallel to the long axis of the shoot ascending on the fertile shoots, and somewhat shorter than lateral. *Leaves* about one inch in length, one-sixteenth of an inch in breadth, linear-oblong, obtuse or slightly notched at the apex, tapering and twisted towards the base, glabrous above, with a depressed midrib, glaucous beneath, with a raised midrib, and recurved margins. Hypoderm continuous, resin canals one near each corner of the leaf, just beneath the epidermis. *Male flowers* unknown. *Cones* clustered on the sides of the branches, erect, three inches and a half to five inches and a half long, one and a half to two inches wide, dull purple, cask-shaped. *Scales* suborbicular, entire, wedge-shaped at the base, covered with a reddish down when young. *Bracts* half the length of the scales, and concealed by them, obovate-oblong, retuse, with a small, deciduous central acumen, edge of the bract finally jagged.* Seeds nearly as long as the scale; wing wedge-shaped, entire, somewhat truncate.—M. T. Masters.

Fig. 1, section of leaf showing the position of the resin canals; 2, scale of cone with bract; 3, bract enlarged; 4, 5, seeds:—*all enlarged*.

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* As shown in the figure in the *Gardeners' Chronicle*, but in Maries' n. 73 the bracts are precisely as here figured.

M.S. del. J.N. Fitch Lith.

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Tab. 8099.

BLAKEA gracilis.

Costa Rica.

Melastomaceæ. Tribe Blakeæ.

Blakea, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 770.

Blakea gracilis, *Hemsl. Diag. Plant. Nov.* p. 13 *et Biol. Cent. Amer. Bot.* vol. i. p. 433, t. 23; *Cogn. in DC. Monogr.* vol. vii. p. 1073; *B. spruceanæ*, Cogn., proxima, sed glabra, bracteis interioribus quam exterioribus multo minoribus, petalis apice rotundatis vel retusis differt.

Frutex 9–13 ped. altus vel interdum arbor parva, valde ramosus, glaber, ramulis gracilibus teretibus patentibus. *Folia* subcoriacea, 5-nervia, obovato-elliptica vel elliptica, 2½–4 poll. longa, 1¼–1½ poll. lata, integerrima, abrupte breviterque acuminata, basi cuneata, venis lateralibus numerosissimis; petioli 5–10 lin. longi. *Flores* axillares, solitarii vel rare geminati, circiter 1½ poll. diam., 4-bracteati; pedunculi, ¾–2 poll. longi, graciles; bracteæ trinerviæ, membranaceæ, 2 exteriores multo majores, fere pollicares, foliis simillimæ, interiores obovato-spathulatæ. *Calycis* tubus campanulatus, circiter ¼ poll. longus; limbus membranaceus, truncatus vel obscure 6-lobatus. *Petala* 6, albido-rosea, oblique et late obovata, apice rotundata vel retusa. *Stamina* 12, æqualia; antheræ magnæ, oblongæ, filamentis crassis subduplo longiores. *Stylus* elongatus, stigmate parvo. *Bacca* late ovoideo-urceolaris, primum 12-costata, fere 5 lin. diam.

Cogniaux describes thirty-one species of *Blakea* in his Monograph of the Melastomaceæ. Of these, nine are native of Peru, eight of the Republic of Colombia, four of Costa Rica, four of Venezuela, two of Brazil, one of Guatemala, one of Ecuador, and two of the West Indies, one of which is confined to Jamaica and the other to several of the Windward Islands. *B. guianensis*, Baillon, is undescribed and unlocalized.

Blakea gracilis was first described from material collected by Endres for Messrs. James Veitch & Sons. It has since been found in several localities in Costa Rica, growing in forests at elevations up to 5,570 feet. The Kew plant, from which the accompanying drawing was made, was purchased from Messrs. Lemoine & Sons, of Nancy, in 1904, and flowered in a greenhouse in February of the current year. At present it is scarcely more than a foot high, but owing to the spreading habit of its branches it is as much as two and a half feet across. Some of the leaves have one or two small pouches near the midrib at the

base on the underside which may be regarded as modified "domatia." Similar structures are present on the leaves of several melastomaceous plants, and are particularly well seen in *Tococa lancifolia*. [See Schimper, *Plant Geography*, p. 132.] The domatia of *Blakea gracilis*, under cultivation, are sometimes occupied by the troublesome Mealy Bug, *Coccus adonidum*.

Blakea trinervia, the only other species yet introduced into European gardens, is figured at t. 451 of this work. *B. quinquenervia*, included in some horticultural dictionaries, has been referred to *Bellucia grossularioides*, Triana.

Descr.—A glabrous, much-branched shrub, nine to thirteen feet high, or sometimes a small tree; branches slender, round, spreading. *Leaves* subcoriaceous, five-nerved, obovate-elliptic or elliptic, two and a half to four inches long, an inch and a quarter to an inch and a half broad, quite entire, abruptly and shortly acuminate, cuneate at the base; lateral veins very numerous; petioles about half to slightly more than three-quarters of an inch long. *Flowers* axillary, solitary or rarely geminate, about an inch and a half across, four-bracteate; peduncles three-quarters to two inches long, slender; bracts three-nerved, membranous, the two outer much larger, almost an inch long, very similar to the leaves, the inner obovate-spathulate. *Calyx-tube* campanulate, about a quarter of an inch long; limb membranous, truncate or obscurely six-lobed. *Petals* six, whitish-rose, obliquely and broadly obovate, rounded or retuse at the apex. *Stamens* twelve, equal; anthers large, oblong, nearly twice as long as the filaments. *Style* elongated; stigma small *Berry* broadly ovoid-urn-shaped, at first twelve-costate, almost half an inch across.—S. A. Skan.

Fig. 1, base of leaf showing "domatia" on the under-side; 2, calyx and pistil; 3 and 4, stamens:—*all enlarged.*

M.S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son Lt.d Imp

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Tab. 8100.

CHLORÆA VIRESCENS.

Chili.

Orchidaceæ. Tribe Neottieæ.

Chloræa, *Lindl.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 618; *Kränzl. Orch. Gen. et Sp.* vol. ii. p. 42.

Chloræa virescens, *Lindl. in Brand. Quart. Journ. Roy. Instit.* vol. i. (1827), p. 51; *Lindl. Gen. & Sp. Orch.* p. 404; *Lindl. Bot. Reg.* 1845, t. 49 (excl. syn.); *Kränzl. Orch. Gen. et Sp.* vol. ii. p. 105, t. 11, figs. A, B; *Orch. Rev.* 1903, p. 133; inter species sectionis *Euchlorææ* floribus flavis, labello trilobo facie superiore papillis falcatis numerosis instructo basi 5-carinato distincta.

Herba terrestris, circa 1–1½ ped. alta. *Folia* cæspitosa, suberecta vel patentia, oblonga, obtusa, lævia, 3–6 poll. longa, ¾–1 poll. lata. *Scapus* erectus, crassiusculus, vaginis numerosis imbricatis acuminatis obtectus; racemus 4–6 poll. longus, densiflorus. *Bracteæ* oblongo-lanceolatæ, acutæ vel acuminatæ, ¾–1¼ poll. longæ. *Pedicelli* 6–7 lin. longi. *Flores* speciosi, flavi, viridi-venosi. *Sepalum* posticum erectum, elliptico-oblongum, obtusum, 10–12 lin. longum; lateralia patentia, oblonga, obtusa, 10–12 lin. longa, supra medium incrassata vel cristis carnosis instructa. *Petala* erecta, elliptico-oblonga, obtusa, 8–10 lin. longa. *Labellum* recurvum, trilobum, 8–10 lin. longum, facie superiore papillis falcatis numerosis instructum; lobus intermedius late ellipticus, obtusus, crenulatus; lobi laterales angusti, obtusi; discus basi 5-carinatus. *Columna* clavata, 6–7 lin. longa; anthera apiculata; pollinia oblonga, sulcata, pulvereo-granulosa.

Three striking species of the large South American genus *Chloræa* have been figured in this work, namely, *C. longibracteata*, Lindl. (t. 7909), *C. crispa*, Lindl. (t. 7955), and a third, now known as *C. Ulantha*, Rolfe, which appeared in 1830 (t. 2956), under the name of *Neottia? grandiflora*, Hook., but was afterwards made the type of a new genus, and called *Ulantha grandiflora*, Hook. (sub t. 2990). This remarkable plant is still only known from the original example, which flowered in the Glasgow Botanic Garden as long ago as the spring of 1829, and of which only a single flower is preserved in Sir William Hooker's Herbarium, now at Kew. The dried flower has an expanse of over four inches. It is recorded as having been received from the Rev. Lansdown Guilding, and, although the locality is not mentioned, it has been conjectured to be the Island of St. Vincent, in the West Indies, though probably not indigenous. From what is now known of the distribution of the genus, this con-

jecture is open to question ; but in any case it is remarkable that so striking a plant has not subsequently been met with.

Chloræa virescens, Lindl., originally appeared in cultivation in the Birmingham Botanic Garden, in 1845, when it was exhibited at a meeting of the Horticultural Society, and figured in the "Botanical Register," but soon appears to have been lost sight of. It was recently re-introduced by H. G. Elwes, Esq., F.R.S., of Colesborne, Gloucestershire, who met with it on sandy flats near Coronel, on the railway from Concepcion, Chili, in December, 1901, and who sent plants to Kew, which flowered in a greenhouse, in April, 1903, and on two or three subsequent occasions.

Descr.—A deciduous, terrestrial herb, a foot to a foot and a half high. *Leaves* tufted, suberect, or the lower spreading, oblong, obtuse, glabrous, three to six inches long, three-quarters to an inch broad. *Scape* erect, stout, bearing numerous acute, imbricating sheaths ; raceme dense, four to six inches long. *Bracts* oblong-lanceolate, acute or acuminate, three-quarters to an inch and a quarter long. *Pedicels* stout, about half an inch long. *Flowers* large, yellow, veined with green. *Dorsal* sepal erect, elliptic-oblong, obtuse, about an inch long ; lateral spreading, oblong, obtuse, about an inch long, thickened towards the apex or bearing there a few fleshy, green tubercles. *Petals* erect, elliptic-oblong, obtuse, about three-quarters of an inch long. *Lip* recurved, 3-lobed, about three-quarters of an inch long, the veins of the upper surface bearing numerous falcate papillæ; front lobe broadly elliptic, obtuse, crenulate ; side lobes narrow and obtuse ; disc with five keels near the base. *Column* clavate, about half an inch long ; anther apiculate ; pollinia oblong, channelled down the middle, granular.—R. A. Rolfe.

Fig. 1, lip, with one side lobe removed; 2, column; 3, pollinia:—*all enlarged.*

M. S. del. J.N. Fitch lith

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Tab. 8101.

PASSIFLORA punctata.

South America.

Passifloraceæ. Tribe Passiflorfæ.

Passiflora, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 810; *Mast. in Trans. Linn. Soc.* vol. xxvii. p. 629.

Passiflora punctata, *Linn. Sp. Pl.* p. 957; *Cav. Diss.* p. 446, t. 269; *Mast. in Mart. Fl. Bras.* vol. xiii. pars i. p. 593; planta nostra ab affinibus foliorum maculis intercostalibus purpureis facile distinguitur.

Herba cpe cirrhorum scandens. *Caules* compressi, sulcati, ut petioli minute puberuli. *Folia* subsemicircularia vel fere lunata, paullo triloba, lobis rotundatis mucronatis intermedio quam lateralibus minore, rarius biloba, 1–3 poll. longa, 2½–4 poll. lata, basi rotundata vel subcordata, membranacea, utrinque purpureo-maculata, supra glabra, subtus minutissime puberula, glanduloso-punctata; petioli ½–1½ poll. longi. *Stipulæ* falcato-subulatæ, integræ, 1–1½ lin. longæ. *Pedunculi* plerumque gemini, interdum solitarii, petiolis æquilongi vel iis paullo longiores, circa 1½ lin. infra apicem articulati, bracteis 2–3 lineari-subulatis 1½–2 lin. longis. *Receptaculum* convexulum, vix ultra ½ poll. diametro, dimidio exteriore incrassato. *Sepala* lutea, ovato-oblonga, apice rotundata, 7–8 lin. longa, medio 3 lin. lata, anthesi reflexa. *Petala* lutea, conformia, 4½ lin. longa, medio 2 lin. lata. *Corona* triseriata; segmenta extima lateraliter compressa, triangulari-capitata, 3 lin. longa, lutea, apice violacea; segmenta intermedia filamentiformia, pauca, inconspicua, circa 1½ lin. longa; segmenta intima fere ad apicem in annulum plicatum inflexum vix 2 lin. latum connata. *Androgynophorum* 4 lin. longum, glabrum. *Filamenta* 3–3½ lin. longa. *Ovarium* subglobosum, minute pubescens; styli crassiusculi, 4 lin. longi.—*Granadilla folio tricuspidi, obtuso et oculato*, Feuill. Journ. vol. i. p. 718, t. 11. *Passiflora foliis trilobis oblongis subtus punctatis: intermedio minore*, Linn. Amœn. Acad. vol. i. p. 224, t. 10, f. 12.

Passiflora punctata was founded on the description and figure given by Feuillé in his "Journal." Feuillé described the sepals as being greyish-green, the petals as whitish, and the segments of the outer series of the corona as violet with yellow points; and he stated that he found the plant in a garden at Malambo, a northern suburb of Lima, the capital of Peru. Almost the same form of the species was cultivated in the Palm House at Kew, probably about the middle of last century, and a specimen was laid into the Hookerian Herbarium. The label gives the following particulars:—*Passiflora* from Lima; sepals green; petals small, greenish white; coronal filaments light blue, outer row tipped with a creamy white. The peduncles of the herbarium specimen are solitary in the

axils, as described and figured by Feuillé. In both Feuillé's plant and the one grown at Kew, the leaves were presumably not variegated, as no mention is made of their colour.

In the *Flora Brasiliensis l.c.*, Masters quoted specimens of *P. punctata* from Peru, Ecuador and Brazil, including forms with geminate peduncles. He described the outermost segments of the corona as scimitar-shaped. Some of the specimens of *P. punctata* in the Kew Herbarium (e.g. Lehmann's No. 3049 from the Cauca Valley, Colombia), have scimitar-shaped outer segments, but others, including the "Passiflora from Lima" in the Hookerian Herbarium, have triangular-headed segments, as in the plant now figured. Hardly any two specimens have the coronal segments precisely similar.

The plant now figured has the segments of the middle series fewer and less conspicuous than in any other specimen we have examined. The leaves also differ from the type in having purplish blotches *between* the veins. In the leaves of *P. trifasciata*, which have a similar coloration, the purplish bands coincide with the three main veins.

The figure was drawn from a plant which was received in 1904 from the State Botanic Gardens, Brussels, under the name *P. maculata*, and which flowered at Kew in the autumn of 1905.

Descr.—An herbaceous tendril-climber. *Stems* compressed, furrowed, minutely puberulous. *Leaves* nearly semicircular or almost lunate, shallowly trilobed, the lobes rounded and mucronate, the middle one smaller than the lateral, more rarely bilobed, one to three inches long, two and a half to four inches broad, rounded or subcordate at the base, membranous, variegated with purple on both surfaces, glabrous on the upper, gland-dotted and very minutely puberulous on the lower; petioles from half to one inch and a half long, minutely puberulous. *Stipules* subulate-sickle-shaped, entire, a twelfth to an eighth of an inch long. *Peduncles* usually two together, sometimes solitary in the axils, as long as or slightly longer than the petioles, jointed about an eighth of an inch below the apex; bracts two to three, linear-subulate, an eighth to a sixth of an inch long. *Receptacle* slightly convex, rather

over half an inch in diameter, the outer half with an annular thickening on the upper surface, terminating in a raised rim surrounding the base of the gynophore. *Sepals* pale yellow, ovate-oblong, rounded at the apex, rather under three-quarters of an inch long, a quarter of an inch broad at the middle, reflexed. *Petals* of similar colour and shape, over a third of an inch long, a sixth of an inch broad at the middle. *Corona* of three rows; outer segments laterally compressed, triangular-capitate, a quarter of an inch long, yellow, with a violet head; segments of the middle row filament-like, few and inconspicuous, half as long as the outer ones; segments of the inner row connate almost to the apex into a much-folded inflexed ring, about a sixth of an inch broad. *Androgynophore* glabrous, a third of an inch long. *Ovary* subglobose, minutely pubescent; styles rather thick.—T. A. Sprague.

Fig. 1, base of leaf, showing under surface and glands; 2, a gland from another part of the leaf; 3, longitudinal section of flower; 4, a coronal segment of the outermost row; 5 and 6, anthers; 7, pistil:—*all enlarged.*

M.S. del. J.N. Fitch lith

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Tab. 8102.

LILIUM myriophyllum.

China.

Liliaceæ. Tribe Tulipeæ.

Lilium, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 816.

Lilium myriophyllum, *Franch. in Morot, Journ. de Bot.* vol. vi. p. 313; ex affinitate *L. Brownii*, F. E. Brown, a quo foliis linearibus uninerviis perianthioque basi plus minusve saccato recedit.

Bulbus ovoideus, 3 poll. diametro, squamatus. *Caulis* 1–6 ped. altus, infra nudus, supra dense foliatus, glaber, nonnunquam ad folicrum axillas bulbiferus. *Folia* linearia vel lanceolato-linearia, acuminata, basi incrassata, glabra, uninervia, 4 poll. longa, 3 lin. lata, marginibus paullo revolutis. *Flores* sæpius 2, terminales, nutantes; pedicelli breves. *Perianthium* circa 5 poll. longum, tubuloso-campanulatum, intus basi luteum, parte superiore album, extus rubro tinctum, costis obscurioribus; segmenta exteriora lanceolata, 1 poll. lata, interiora obovato-elliptica, 2 poll. lata; nectarium glabrum. *Stamina* perianthio paullo breviora; filamenta basi minute puberula; antheræ fere basifixæ, semipollicares, aurantiacæ. *Stylus* staminibus paullo longior; stigma trilobatum, viride. C. H. Wright in Journ. Linn. Soc. vol. xxxvi. p. 133; Gard. Chron. 1905, vol. ii. p. 328, cum icone. *L. Brownii*, var. *leucanthum*, The Garden, April 28th, 1906, Suppl., non Baker.

This is a member of a group of very closely related lilies, which cluster around *L. Brownii*, F. E. Brown (ex Spae in *Ann. Soc. Agric. de Gand*, vol. i. 1845, p. 437, t. 41), and of which they are probably geographical forms. The type specimen of *L. myriophyllum* (of which there is a tracing in the Kew Herbarium) is destitute of a bulb, but shows the so-called "rhizome," which Franchet relies on as one of the diagnostic characters, to be merely an elongated part of the stem bearing rootlets above the bulb. Similar rootlets are developed in many species of lilies in early summer to supply nourishment to the aerial parts of the plant, while those at the base of the bulb are formed in autumn to perform the same function for that organ, as was described by the late Dr. Wallace in the second edition of his *Notes on Lilies*, p. 4. A specimen bearing a bulb has been received from Messrs. James Veitch & Sons.

L. myriophyllum was one of the numerous discoveries of the late Père Delavay, several of which have already been figured in this work. He found it in July, 1888, flowering amongst bushes in stony places at Mosoyn, in the pro-

vince of Yunnan, and it has since been collected in North-West Szechuen, by Mr. E. H. Wilson, who sent bulbs to Messrs. James Veitch & Sons, to whom we are indebted for the specimen here figured. The shape of the perianth resembles that of *L. japonicum*, Thunb., which differs in having broader, more membranous, shortly petiolate leaves, with never less than three nerves. In typical *L. Brownii* the perianth tapers gradually from a narrow, non-saccate base.

Descr.—*Bulb* ovoid, three inches in diameter, scaly. *Stem* from one to six feet high, naked below, densely leafy above, glabrous, sometimes bearing bulbils in the axils of the leaves. *Leaves* linear or lanceolate-linear, acuminate, inserted by a thickened base, glabrous, one-nerved, four inches long, a quarter of an inch wide, margins slightly revolute. *Flowers* usually two at the apex of the stem, nodding; pedicels short. *Perianth* about five inches long, tubular-campanulate, white inside, yellow in the tube, flushed with dull crimson on the outside, darker on the midribs; outer segments lanceolate, one inch wide; inner segments obovate-elliptic, two inches wide; nectary wide, glabrous. *Stamens* rather shorter than the perianth; filaments minutely puberulous in the lower part; anthers almost basifixed, half an inch long, orange. *Style* a little longer than the stamens; stigma three-lobed, green.—C. H. Wright.

Figs. 1 and 2, front and back views of an anther; 3, stigma:—*all enlarged.*

Note.—*Lilium Brownii*, Poit. in Rev. Hortic. sér. II. ii. (1843-44) p. 496 is *L. japonicum*, Thunb.—W. T. T.-D.

M.S. del J.N. Fitch lith.

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Tab. 8103.

LYCASTE dyeriana.

Peru.

Orchidaceæ. Tribe Vandeæ.

Lycaste, *Lindl.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 547.

Lycaste dyeriana, *Sander, ex Rolfe in Kew Bulletin*, 1898, p. 195; *Orch. Rev.* 1898, p. 303; *Gard. Chron.* 1895, vol. ii. p. 49; a cæteris speciebus habitu pendulo et foliis glaucis differt.

Herba epiphytica, cæspitosa, pendula. *Pseudobulbi* ovoideo-orbiculares, subcompressi, obscure angulati, circa $1\frac{1}{2}$ poll. lati, diphylli. *Folia* pendula, lanceolata, acuminata, basi attenuata, glauca, 6–11 poll. longa, 1–$1\frac{1}{2}$ poll. lata. *Scapi* a basi pseudobulborum producti, penduli, medio vagina spathacea obtecti, 3–5 poll. longi. *Bracteæ* spathaceæ, late elliptico-oblongæ, apiculatæ, glaucæ, 9–10 lin. longæ. *Flores* pallide virides. *Sepalum* posticum lanceolato-oblongum, subobtusum, $1\frac{3}{4}$–2 poll. longum, 7–9 lin. latum; sepala lateralia oblonga, subobtusa, obscure carinata, $1\frac{3}{4}$–2 poll longa, 8–10 lin. lata. *Petala* oblonga, subobtusa, $1\frac{1}{2}$–$1\frac{3}{4}$ poll. longa, 5–6 lin. lata. *Labellum* 1–$1\frac{1}{4}$ poll. longum, obscure trilobum; lobi laterales suberecti, basi angusti, prope apicem dilatati et obtusi; lobo intermedio elliptico denticulato convexo apice reflexo et obtuso; discus canaliculatus; callus oblongus bilobus margine incrassato. *Columna* clavata, incurva, 8 lin. longa, alis anguste auriculatis. *Mentum* conicum, obtusum, 4 lin. longum.

Lycaste dyeriana, Sander, like *Cattleya citrina*, Lindl. (Bot. Mag. t. 3742),* and *Masdevallia deorsa*, Rolfe (t. 7766), in their respective genera, is quite anomalous in habit, differing from its allies in having acquired a pendulous habit, which extends to the entire plant, pseudobulbs, leaves and flowers. A similar habit has been acquired by the species of the small genus *Scuticaria* and some other epiphytes, and it has been observed by Rodway that such plants are usually found on the edges of the branches of the trees on which they grow, while the centre is occupied by erect and more robust epiphytes, and the habit is regarded as adaptive, natural selection gradually fitting them to their environment.

The species figured was introduced by Messrs. F. Sander & Sons, St. Albans, and exhibited by them at the Royal Horticultural Society on July 9th, 1895, when it received a Botanical Certificate. A plant received at Kew died, but another received in 1903 from the Royal Botanic

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* By mistake, that plant is drawn erect and only the flower pendulous.

Garden, Glasnevin, has flowered annually under greenhouse treatment, being suspended in its natural position.

Descr.—A tufted, epiphytic, pendulous herb. *Bulbs* ovoid-orbicular, somewhat compressed and obscurely angled, about an inch and a half long, diphyllous. *Leaves* pendulous, lanceolate, acuminate, attenuate at the base, glaucous, about half to a foot long, an inch to an inch and a half broad. *Scapes* produced from the base of the bulbs, pendulous, with a spathaceous sheath about the middle, three to five inches long. *Bracts* spathaceous, broadly elliptic-oblong, apiculate, glaucous, over three-quarters of an inch long. *Flowers* pale green. *Dorsal* sepal lanceolate-oblong, subobtuse, about two inches long, by nearly three-quarters of an inch broad; lateral sepals oblong, subobtuse, as long as the dorsal and slightly broader. *Petals* oblong, subobtuse, rather shorter and narrower than the sepals. *Lip* about an inch and a quarter long, obscurely three-lobed; side lobes suberect, narrow at the base, dilated and obtuse at the apex; front lobe elliptic, convex, denticulate, reflexed and obtuse at the apex; disc channelled; crest oblong, two-lobed at the apex and thickened at the margins. *Column* clavate, incurved, nearly three-quarters of an inch long, with narrow, auriculate wings. *Chin* conical, obtuse, about a third of an inch long.—R. A. Rolfe.

Fig. 1, lip with one side lobe cut off; 2, column; 3 and 4, pollinarium, seen from front and back:—*all enlarged.*

M.S. del. J.N. Fitch lith.

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Tab. 8104.

COTYLEDON DEVENSIS.

Of garden origin.

CRASSULACEÆ.

COTYLEDON, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 659.

Cotyledon (§ **Echeveria**) **devensis**, hybrida (**glauca** × **gibbiflora** ?) vel **forma staturæ insignitæ.**

Planta succulenta, caule $1\frac{1}{4}$ ped. alto, $1\frac{1}{2}$ poll. crasso. *Folia* laxe rosulata, 8–10 poll. longa, 3–$3\frac{1}{2}$ poll. lata, oblanceolata vel elongato-obovata, obtusa, apiculata, glauco-virentia, basi roseo-purpureo tincta. *Pedunculi* duo, 5–7 ped alti, inferne foliis anguste oblanceolatis $3\frac{1}{2}$–$4\frac{1}{2}$ poll. longis, $\frac{3}{4}$–$1\frac{1}{4}$ poll. latis laxe obtecti, superne nudi, rubescentes. *Paniculæ* 9 poll. longæ, racemis recurvis 2–$4\frac{1}{2}$ poll. longis compositæ. *Flores* pedicellati, bracteati. *Sepala* 3–4 lin. longa, carnosa, lineari-lanceolata, albo-glauca, leviter roseo-tincta. *Corolla* 6–7 lin. longa, rubra, glauca.

This plant is so remarkable among its allies for its great stature as to be worth a place in this work. Unfortunately its history is unknown, except that it was received at Kew in 1902 as a hybrid between *C. glauca*, Baker, and *C. gibbiflora*, Baker (better known in gardens as *Echeveria metallica*), from Messrs. Dicksons, of Chester, who, however, are unable to give any information as to its origin. How or where it was raised, cannot be ascertained. If a hybrid, it differs widely from those already known in gardens between the same parents—*Echeveria glauco-metallica* and *E. metallico-glauca*, which are stemless plants with leaves in a dense rosette about nine inches in diam., and flower-stems only one to one and a half feet high, whilst this plant has a stout stem a foot high, and flower-stems five to seven feet high. That it is derived in some way from *C. gibbiflora* either as hybrid or chance variation is probable. But it seems scarcely credible that the small stemless *C. glauca* should be a parent of the most gigantic form of the genus at present known. Except in its giant stature it much resembles the form figured as *Echeveria gibbiflora* in Lindley's *Botanical Register*, t. 1247. The plant attracted considerable attention from cultivators of succulent plants when it flowered at Kew in February and March of this year, and it is now coming into flower again. It may be conveniently dis-

tinguished as *C. devensis* from Deva, the Roman name of Chester.

Descr.—A succulent perennial, with a simple stem fifteen inches high, and one inch and a half thick, marked with the transverse scars of fallen leaves, glaucous-green above, becoming brown with age. *Leaves* laxly rosulate, eight to ten inches long, three to three and a half inches broad, oblanceolate or elongate-obovate, tapering into a broad, short petiole, light green, tinged with light rosy purple at the base, slightly glaucous. *Flower-stems* two, one on either side of the plant, five to seven feet long, half to three-quarters of an inch thick, erect, somewhat flexuose, purplish or reddish on the upper part, green below, glaucous, the lower half laxly covered with elongate, oblanceolate, acute leaves, three and a half to four and a half inches long, and three-quarters to one and a quarter of an inch broad, tapering to the shortly spurred base, light green, tinged with rosy-purple at the base, slightly glaucous. *Panicle* about nine inches long, of several recurving racemes two to four and a half inches long. *Flowers* pedicellate, bracteate. *Sepals* one-quarter to one-third of an inch long, very spreading, fleshy, linear-lanceolate, acute, whitish-glaucous, slightly rosy-tinted. *Corolla* six to seven lines long, five-angled, with lanceolate, acute segments, scarlet-red, paler towards the base, very glaucous. *Stamens* included. *Hypogynous glands* transverse, emarginate. *Carpels* whitish, tapering into short, purple styles.—N. E. Brown.

Fig. 1, flower, with the corolla and stamens removed, showing the hypogynous glands and carpels; 2, petal and stamen; 3, anther, side view; 4, whole plant:—figs. 1—3, *enlarged*; fig. 4, *greatly reduced*.

M. S. del. J. N. Fitch lith.

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Tab. 8105.

RIBES cruentum.

Western United States.

Saxifragaceæ. Tribe Ribesieæ.

Ribes, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 654.

Ribes (§ Grossularia) **cruentum**, *Greene, Pittonia*, vol. iv. p. 35; a *R. amicto*, Greene, foliis et calyce fere omnino glabratis præcipue differt.

Frutex diffuse ramosus, novellis minutissime puberulis exceptis, glaber; aculei subaxillares 3, stricti vel leviter curvati, $\frac{1}{4}$–$\frac{1}{2}$ poll. longi, medio lateralibus longiori. *Folia* suborbicularia, 3- vel 5-lobata, $\frac{2}{3}$–$1\frac{1}{2}$ poll. diam., basi distincte lobata vel interdum fere truncata; lobi breviter lateque crenati; petioli gracillimi, circiter $\frac{1}{4}$ poll. longi. *Pedunculi* solitarii, 1-flori, $\frac{1}{4}$–$\frac{1}{3}$ poll. longi, bractea solitaria spathacea decidua ovarium fere omnino vaginante instructi. *Calyx* circiter $\frac{1}{2}$ poll. longus, glaber, saturate ruber, interdum apice loborum pallide viridis; tubus subcylindricus, circiter 2 lin. longus; lobi oblongi, 3–4 lin. longi, obtusi, primum patentes, demum reflexi. *Petala* erecta, alba, late obovata, involuta, 2 lin. longa, apice $1\frac{1}{2}$ lin. lata, ibidem minute denticulata. *Stamina* calycis lobos æquantia vel leviter superantia; antheræ sagittato-oblongæ, fere 2 lin. longæ, apiculatæ. *Ovarium* aculeis pallidis cum glandulis sessilibus vel breviter stipitatis mixtis dense vestitum. *Stylus* staminibus paulum longior, bifidus. *Bacca* subglobosa, rubra, circiter $\frac{2}{3}$ poll. diam., aculeis patentibus 2–3 lin. longis armata.

The specimen figured, which was obtained from a plant purchased from Mr. L. Späth, of Rixdorf, Berlin, in 1899, differs, in some particulars, from the wild specimens preserved in the Kew Herbarium. The most noteworthy is, that in the cultivated plant the petals are much broader and less conspicuously denticulate at the apex. It is also described as "wholly glabrous," but in the cultivated specimen a minute, but rather dense, pubescence may be found on the younger branches and leaves. Beyond this there is little to distinguish it from *R. amictum*, of which the pubescence is very marked.

R. cruentum, according to Prof. Greene, is common in the Californian Coast Range, from Sonoma County northward into Southern Oregon.

The plant at Kew is growing in the *Ribes* Collection, near the Temperate House, and is now about two feet high and more than a yard across. It flowers in May.

Descr.—A dwarf, diffusely branched shrub, glabrous, except the very minute pubescence on the younger parts; subaxillary spines three, straight or slightly curved, a

quarter to half an inch long, the median longer than the lateral. *Leaves* suborbicular, three- or five-lobed, two-thirds to an inch and a half across, distinctly lobed or sometimes almost truncate at the base; lobes shortly and broadly crenate; petioles very slender, about a quarter of an inch long. *Peduncles* solitary, one-flowered, a quarter to a third of an inch long; bract solitary, spathaceous, deciduous, almost entirely enveloping the ovary. *Calyx* about half an inch long, glabrous, crimson, sometimes pale green at the apex of the lobes; tube subcylindric, about a sixth of an inch long; lobes oblong, a quarter to a third of an inch long, obtuse, at first spreading, afterwards reflexed. *Petals* erect, white, broadly obovate, involute, a sixth of an inch long, an eighth of an inch broad, and minutely denticulate at the apex. *Stamens* as long as, or slightly longer than, the calyx-lobes; anthers sagittate-oblong, apiculate. *Ovary* densely covered with pallid spines, mixed with sessile or shortly stalked glands. *Style* slightly longer than the stamens, bifid. *Berry* subglobose, red, about two-thirds of an inch in diameter, with spreading spines a sixth to a quarter of an inch long.—S. A. Skan.

Fig. 1, peduncle and pistil; 2, bract; 3, two of the petals and a stamen; 4, a stamen:—*all enlarged.*

M.S. del J.N. Fitch lith.

Vincent Brooks Day & Son Ltd. Imp

L. Reeve & Co. London.

Tab. 8106.

PLEIONE YUNNANENSIS.

China.

Orchidaceæ. Tribe Epidendreæ.

Pleione, *D. Don Prodr. Fl. Nepal.* p. 36; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 518, sub Cœlogyne.

Pleione yunnanensis, *Rolfe in Orch. Rev.* 1903, p. 292; 1906, p. 81, fig. 10; *Gard. Chron.* 1906, vol. i. p. 115; *Journ. of Hort.* 1906, vol. i. p. 251, cum ic.; a speciebus reliquis cultis pseudobulbis globoso-ovoideis et scapis altioribus distincta.

Herba terrestris, cæspitosa, rhizomate valido. *Pseudobulbi* ovoideo-globosi, nitidi, circa 1 poll. lati, monophylli. *Folia* elliptico-lanceolata, acuta, plicata, membranacea, circa 1 ped. longa, $1\frac{1}{2}$–$1\frac{3}{4}$ poll. lata, basi vaginis spathaceo-oblongis obtecta. *Scapi* erecti, 5–6 poll. alti, basi vaginis spathaceis imbricatis obtecti, uniflori. *Bracteæ* spathaceæ, oblongæ, obtusæ, 1–$1\frac{1}{4}$ poll. longæ. *Pedicelli* $1\frac{1}{4}$–$1\frac{1}{2}$ poll. longi. *Flores* speciosi, roseo-purpurei, labello atropurpureo-maculati. *Sepala* patentia, oblongo-lanceolata, subobtusa, $1\frac{1}{2}$–$1\frac{3}{4}$ poll. longa, 4 lin. lata. *Petala* subsimilia, paullo angustiora. *Labellum* obovato-orbiculare, fimbriatum, 1–$1\frac{1}{4}$ poll. latum, lateribus incurvis et circa columnam convolutis, disci lamellis 5 denticulatis vel fimbriatis. *Columna* clavata, incurva, alata, 9–10 lin. longa, apice 3 lin. lata, alis obtusis; pollinia 4, ovoideo-oblonga, basi glandulæ oblongæ affixa.—*Cœlogyne* (*Pleione*) *yunnanensis,* Rolfe in Journ. Linn. Soc. vol. xxxvi. p. 23.

Pleione is a small Indian and Chinese genus of Orchids which was established by D. Don, in 1825, and afterwards united with *Cœlogyne,* Lindl., though markedly different in habit, in its annual pseudobulbs, thin, deciduous leaves, erect, one-flowered inflorescence and in floral structure. At least eleven species are known, six of which are natives of Northern India, and all have appeared in cultivation, and been figured in the Botanical Magazine. These are *Pleione præcox,* D. Don (t. 4496), *P. maculata,* Lindl. (t. 4691), *P. lagenaria,* Lindl. (t. 5370), *P. humilis,* D. Don (t. 5674), *P. reichenbachiana,* T. Moore (t. 5753), and *P. hookeriana,* T. Moore (t. 6388) —all under the name of *Cœlogyne.* They are charming little plants, and are often called Indian Crocuses. Two of the five Chinese species have also recently been introduced, but only this one has as yet flowered.

Pleione yunnanensis, Rolfe, was originally discovered by Mr. W. Hancock, F.L.S., in mountain pastures at Mengtse,

in the province of Yunnan, at 6,000 to 7,000 feet elevation, in March, 1895, and Dr. Augustine Henry, F.L.S., shortly afterwards collected it in the same district, but at a slightly lower elevation. Its introduction to cultivation came from another source. At the Royal Horticultural Society in February last a pan of several plants was exhibited by Messrs. Sutton & Sons, of Reading, as "Orchid species from China," which I immediately recognized as a species already described from dried specimens. Shortly afterwards they forwarded flowers to Kew from which this plate was prepared, the leaves, which appear later, being added afterwards. Unlike several of those above mentioned, it is not an autumn-flowering species. Messrs. Sutton received the bulbs from a correspondent in China some years ago, but, having mislaid his address, cannot trace its exact source. It is a very charming little plant.

Descr.—A terrestrial herb, with ovoid-globose, shining, one-leaved bulbs, about an inch broad. *Leaves* elliptic-lanceolate, acute, plicate, membranous, about a foot long by an inch and three-quarters broad, with an oblong, spathaceous, basal sheath. *Scapes* erect, about six inches high, with several imbricating, spathaceous sheaths at the base, one-flowered. *Bracts* spathaceous, oblong, obtuse, over an inch long. *Pedicels* about an inch and a half long. *Flowers* large, rose-purple, with numerous dark purple blotches on the lip. *Sepals* spreading, oblong-lanceolate, somewhat obtuse, about an inch and a half long by a third of an inch broad. *Petals* rather narrower, but otherwise similar. *Lip* obovate-orbicular, fringed, about an inch and a quarter long, the sides incurved and convolute round the column; disc with five denticulate or fimbriate keels. *Column* clavate, incurved, about three-quarters of an inch long, winged, dilated at the apex to a quarter of an inch broad, wings obtuse; pollinia four, ovoid-oblong, affixed to a small, oblong gland at the base.—R A. Rolfe.

Fig. 1, lip with one side removed; 2, its marginal fringes; 3, column; 4 and 5, pollinarium, seen from front and back:—*all enlarged.*

M.S. del. J.N. Fitch lith.

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Tab. 8107.

ÆCHMEA gigas.

Brazil?

Bromeliaceæ. Tribe Bromelieæ.

Æchmea, *Ruiz et Pav.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 663.

Æchmea gigas, *E. Morren ex Baker, Handb. Bromel.* p. 61; *Æ. Lalindei,* Linden & Rodigas, affinis, bracteis inermibus recedit.

Planta acaulescens. *Folia* circa 16 rosulatim disposita, lorata, breviter acuminata, basi vaginata, 3 ped. longa, 5 poll. lata, supra fere glabra, subtus albo-furfuracea; spinæ ad foliorum medium rectæ, inter se 3 lin. distantes, inferiores decurvæ, superiores incurvæ. *Pedunculus* fere 1 ped. longus, robustus; bracteæ dentatæ, inferiores imbricatæ, vagina elliptica inflata purpurea laminaque ovata acuminata viridi, superiores rosulatim congestæ, ovatæ, purpureæ, 5 poll. longæ, 2¼ poll. latæ, dentatæ; spica simplex, oblonga, 5 poll. longa, 2 poll. lata. *Calyx* rigidus, extus albo-lepidotus; lobi 4 lin. longi, suborbiculares, concavi, breviter aristati. *Corolla* breviter exserta, dilute viridis; petala 7 lin. longa, 1½ lin. lata, anguste oblonga, emarginata, basi squamis duabus fimbriatis instructa. *Stamina* ad corollæ medium affixa; antheræ oblongæ, mucronatæ, quam filamenta duplo longiores. *Stylus* breviter trilobus. *Fructus* 3–6-angularis, albo-lepidotus, infra viridis, supra dilute roseus, pyramidalis, sepalorum mucronibus erecto-patentibus coronatus, 1¼ poll. longus.

The plant here figured was purchased from the widow of the late Prof. E. Morren of Liège, and flowered in the Victoria House at Kew for the first time in March last. No description of the species was ever published by Prof. Morren, but there exists amongst his drawings at Kew a life-sized figure by P. Stroobant of a plant which flowered in November, 1881. *Æ. Lalindei*, Linden & Rodigas (*Ill. Hort.* vol. xxx. t. 481), to which this species is united by Mr. Baker, is a very close ally from New Granada, of which perfect flowers are not known. Mez (in *DC. Monogr. Phan.* vol. ix. p. 263) does not agree as to the identity of these two species, but suggests that our plant belongs to the section *Chevallieria*; it seems, however, to connect that section with *Pothuava*, in having the inflorescence of the latter without large bracts subtending each flower, while the angular ovary is that of the former. *Æ. Mariæ-Reginæ*, H. Wendl. (*Bot. Mag.* t. 6441) is another allied species, but with a longer, narrower spike, and narrower bracts.

Since flowering the plant at Kew has produced two

healthy offsets. The original plant was sent to Prof. Morren by Dr. A. Glaziou of Rio Janeiro, and is presumably a native of Brazil.

Descr.—Acaulescent. *Leaves* about sixteen in a tuft, lorate, shortly acuminate, sheathing at the base, three feet long, five inches wide, nearly glabrous above, white furfuraceous beneath; spines at the centre of the leaf three lines apart and straight, the lowermost decurved, the uppermost upcurved. *Peduncle* nearly a foot long; bracts dentate, the lower imbricate, with a crimson, elliptic, inflated sheath and a green, ovate-acuminate blade, the uppermost rosulate, ovate, crimson, five inches long, two and a quarter inches wide; spike oblong, five inches long, two inches wide. *Calyx* rigid, white, lepidote outside; lobes four lines long, suborbicular, concave, shortly awned. *Corolla* shortly exserted, pale green; petals seven lines long, a line and a half wide, narrowly oblong, emarginate, with two fimbriate scales at the base. *Stamens* inserted about half-way up the corolla; anthers oblong, mucronate, about twice as long as the filaments. *Style* shortly three-lobed. *Fruit* three- to six-angled, white lepidote, green below, pale rose and pyramidal above, an inch and a quarter long, crowned by the spreading awns of the persistent sepals.—C. H. Wright.

Fig, 1, portion of calyx and pistil; 2, portion of corolla laid open; 3, anther; 4, apex of style; 5, whole plant:—1–4, *enlarged*; 5, *much reduced*.

M. S. del. J. N. Fitch lith.

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TAB. 8108.

PONTEDERIA CORDATA, *var.* LANCIFOLIA.

Temperate America.

PONTEDERIACEÆ.

PONTEDERIA, *Linn.*: *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 837; *Solms in DC. Monogr.* vol. iv. p. 531.

Pontederia cordata, *Linn.*, var. **lancifolia,** *Morong, in Mem. Torr. Bot. Club,* **vol. v. p. 105; a typo foliis lanceolatis recedit.**

Herba aquatica, 1–2 ped. alta. *Rhizoma* horizontale vel ascendens, abbreviatum, inferne radicibus dense obtectum. *Caules floriferi* erecti, internodiis duobus superioribus elongatis. *Folia* longe petiolata, petiolis inferne vaginantibus; lamina lanceolata, obtusa, basi rotundata vel obtusa, ½–1 ped. longa, 1–2½ poll. lata, glabra. *Spatha* angusta, tubulosa. *Panicula* densa, spiciformis, 2–4 poll. longa. *Perigonium* cæruleum, glanduloso-pilosum, circiter ½ poll. longum; tubus antice fenestratus; lobi ovato-oblongi, tubo breviores; lobus medianus posticus macula flavo-virente notatus. *Achænium* ovatum, læve, breviter apiculatum.—*P. lancifolia*, Muhl. Cat. p. 34; Ell. Sketch. vol. i. p. 382. *P. lanceolata*, Nutt. Gen. Am. vol. i. p. 216.

The small family of the *Pontederiaceæ* contains but five genera, of which three have been figured in this Magazine, namely:—*Pontederia* (t. 1156), in which two of the cells of the ovary are abortive, and only a single ovule is developed in the third cell; *Eichhornia* (t. 2932, sub *Pontederia*, & tt. 5020, 6487), which differs from *Pontederia* in having all three cells developed and containing many ovules; and *Heteranthera* (t. 6192), which is noteworthy, on account of having only three stamens.

One of the best known species is the "Water hyacinth," *Eichhornia speciosa*, a native of Tropical South America, which was introduced into the St. John's River, Florida, about 1890, and increased so rapidly as to become a serious menace to navigation in 1897. A full account of its spread is given in the U.S. Department of Agriculture, Division of Botany, Bull. No. 18. It is figured at t. 2932 under the name *Pontederia azurea*.

The plant now figured was regarded as a distinct species by Muhlenberg and Nuttall, but has been reduced by more recent botanists, including Solms, who monographed the family, to a variety or form of *P. cordata*; the typical form of the latter is figured in t. 1156. The

variety *lancifolia* has been cultivated at Kew for many years, and flowers annually in the Waterlily House.

Descr.—An aquatic herb, one to two feet high. *Rhizome* short, horizontal, or ascending, giving off many roots on its lower surface. *Flowering stems* erect, with the two uppermost internodes elongated. *Leaves* long-petioled; petioles sheathing in their lower part; blade lanceolate, obtuse at the apex, rounded or obtuse at the base, six to twelve inches long, one inch to two inches and a half broad, glabrous. *Panicle* dense, spike-like, two to four inches long. *Perianth* blue, glandular-pilose, about half an inch long; tube with four longitudinal clefts in front; lobes ovate-oblong, shorter than the tube, the median posticous one with a greenish-yellow blotch. *Achene* ovate, smooth, shortly apiculate.—T. A. Sprague.

Fig. 1. a flower, and two young buds; 2, pistil; 3, ditto, longitudinal section; 4, ditto, transverse section :—*all enlarged.*

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M. S. del. J.N. Fitch. lith

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Tab. 8109.

VANDA Watsoni.

Annam.

Orchidaceæ. Tribe Vandeæ.

Vanda, *R. Br.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 578.

Vanda Watsoni, *Rolfe in Gard. Chron.* 1905, vol. i. pp. 82, 123, fig. 52; *Orch. Rev.* 1905, p. 67; aff. *V. kimballianæ*, Reichb. f., a qua differt **labello concavo fimbriato albo, basi saccato nec calcarato.**

Herba epiphytica, gracilis, 1–1¼ ped. alta. *Folia* subteretia, acuta, gracilia, supra læviter canaliculata, 6–14 poll. longa, 2 lin. lata, viridia; vaginæ membranaceæ, brunneo-maculatæ. *Scapi* suberecti, graciles, ¾–1 ped. alti, 10–12-flori. *Bracteæ* ovato-oblongæ, obtusæ, 2 lin. longæ. *Flores* albi; crista flava, purpureo-maculata. *Sepala* obovato-spathulata, obtusa, 9–10 lin. longa; lateralia basi obliqua. *Petala* obovato-spathulata, obtusa, 9 lin. longa, basi deflexa et torta. *Labellum* 3-lobum, 8 lin. longum; lobi laterales incurvi, carnosi, truncati, margines dentibus acutis binis instructi; lobus intermedius cordato-ellipticus, obtusus, concavus, circa 6 lin. latus, margines fimbriati et basi incurvi; saccus obtusus, 1¼ lin. latus, 2 lin. altus, intus flavus, brunneo-maculatus; callus erectus, 3-lobus. *Columna* clavata, 3 lin. longa, pede callo **truncato vel obscure 3-lobo instructo.**

Vanda Watsoni, Rolfe, is a distinct and attractive species, which was discovered in the interior of Annam by Mr. W. Micholitz, a collector for Messrs. Sander & Sons, by whom it was introduced to cultivation, and at whose request it was dedicated to Mr. W. Watson, Curator of the Royal Botanic Gardens, Kew. It flowered at the Royal Botanic Gardens, Glasnevin, early in 1905. It is the third member of a curious little group, characterized by having narrow or acute leaves and racemes of moderate-sized flowers, all of which have now been figured in this work. The two others are *V. kimballiana*, Reichb. f. (t. 7112) and *V. amesiana*, Reichb. f. (t. 7139), both natives of Upper Burma. A fourth species with terete leaves has also been figured, namely, *V. teres*, Lindl. (t. 4114), but that has far larger flowers, which are markedly different in structure.

The plate was prepared in February last from materials furnished by Messrs. Sander, with the help of a living plant in the Kew collection which had previously been received from them. It flowers freely in winter under tropical treatment.

December 1st, 1906.

Descr.—*Plant* almost identical with *Vanda kimballiana*, Reichb. f., in habit, about a foot high. *Leaves* subterete, acute, slender, slightly channelled on the upper side, six to fourteen inches long, less than a quarter of an inch broad, dull, dark green, spotted with brown on the membranous sheaths. *Scapes* nearly erect, slender, about a foot high, with ten to twelve white flowers, having the crest and interior of the sac yellow, spotted with brown. *Bracts* ovate-oblong, obtuse, under a quarter of an inch long. *Sepals* obovate-spathulate, obtuse, about three-quarters of an inch long; the lateral pair oblique at the base. *Petals* similar to the sepals in shape, but rather shorter, deflexed, and twisted at the base, so that the face is turned underneath. *Lip* three-lobed, nearly three-quarters of an inch long; side lobes incurved, truncate, fleshy, with a pair of acute teeth on the inner margin; front lobe cordate-elliptic, obtuse, concave, about half an inch broad, with a fimbriate margin, incurved at the base till the sides nearly meet; sac obtuse, under a quarter of an inch deep, about half as broad, bearing inside an erect three-lobed crest, yellow in colour, spotted with brown. *Column* club-shaped, a quarter of an inch long, bearing a truncate or obscurely three-lobed callus on the foot, opposite to the crest of the lip.—R. A. Rolfe.

Figs. 1 and 2, column, with base of lip, seen from side and front; 3 and 4, pollinarium, seen from front and back:—*all enlarged.*

M.S. del J.N. Fitch lith

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Tab. 8110.

COREOPSIS Grantii.

Eastern Tropical Africa.

Compositæ. Tribe Helianthoideæ.

Coreopsis, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 385.

Coreopsis Grantii, *Oliver in Trans. Linn. Soc.* vol. xxix. p. 98, t. 65, *et Fl. Trop. Africa*, vol. iii. p. 388; *W. W. in Gard. Chron.* 1906, vol. i. p. 162, f. 64; *The Garden*, vol. lxix. p. 161, cum figura; *C. Steppiæ*, Steetz, affinis, foliis bipinnatifidis molliter pubescentibus, achæniis haud alatis, pappi aristis quam achænia multo brevioribus.

Herba perennis, erecta, 2–4 ped. alta, suffruticosa, ramosa, dense foliata, ubique breviter et molliter pubescens; rami patentissimi, subteretes vel obscure angulati, validiores plus minusve semi-pollicares diametro. *Folia* patentia, subsessilia vel longe petiolata, atroviridia, paulum viscida, bipinnatifida, deltoidea, 1–6 poll. longa, basi ¾–6 poll. lata; lobuli ovati, apice rotundati, terminalibus angustioribus acutis exceptis, minutissime apiculati; petioli ad 1¾ poll. longi, ut rhachis anguste alati et supra canaliculati. *Capitula* breviter pedunculata, 1½–2 poll. diam., floribus vivide luteis. *Involucri* bracteæ exteriores herbaceæ, virides, pilosæ, spathulato-oblongæ, 2½ lin. longæ, acutæ, interiores majores, membranaceæ, oblongæ, luteæ, extra pilosæ. *Flores* ligulati sæpissime 8, oblongi, 8–10 lin. longi, 3–4 lin. lati, apice denticulati. *Receptaculi* plani paleæ anguste oblongæ, achæniis leviter longiores. *Achænia* oblongo-linearia, circiter 2½ lin. longa, compressa, marginibus et facie interiore parce setulosa. *Pappus* minutus, setoso-ciliatus, cum aristis duabus oppositis achænio 5–6-plo brevioribus.

Coreopsis Grantii is a herb of robust habit, elegant, dark green foliage, with some resemblance to that of *Anthriscus sylvestris*, and bright yellow flower-heads, produced in the winter months. It is of very easy culture, with treatment similar to that given to the *Chrysanthemum*, and the protection of a cool house during the winter, as it is not quite hardy. It commences to flower in December, and reaches its best in February.

Coreopsis Grantii was first discovered by Capt. Grant in Karagué, German East Africa, during the Speke and Grant Expedition to the sources of the Nile in 1860-63. It appears to have escaped the attention of all subsequent travellers till Messrs. M. T. Dawe and E. Brown, of the Scientific and Forestry Department, Entebbe, collected it in the district of Buddu, Uganda, where it is common at elevations between 3,900 and 5,000 feet. It was grown at Kew from seeds received from Mr. Dawe in 1905.

December 1st, 1906.

The type specimen is rather more hairy than the cultivated plant; its leaves are much smaller, and all are subsessile, but only the upper ones are present. There are variations, too, in the depth of the lobing of the leaves, and in the breadth of the ultimate lobes.

Descr.—A perennial, subshrubby, branched herb, erect, two to four feet high, densely leafy, everywhere shortly and softly pubescent; branches very spreading, subterete or obscurely angular, the stronger about half an inch in diameter. *Leaves* spreading, subsessile, or long-petioled, dark green, somewhat viscid, bipinnatifid, deltoid, one to six inches long, three-quarters to six inches broad at the base; ultimate lobes ovate, rounded at the apex, very minutely apiculate, the terminal ones narrower and acute; petioles up to an inch and three-quarters long, like the rhachis narrowly winged and channelled on the upper side. *Flower-heads* shortly peduncled, an inch and a half to two inches in diameter, with bright yellow florets. *Outer bracts* of the involucre herbaceous, green, pilose, spathulate-oblong, nearly a quarter of an inch long, acute; inner larger, membranous, oblong, yellow, pilose outside. *Ligulate florets* usually eight, oblong, two-thirds to slightly more than three-quarters of an inch long, a quarter to a third of an inch broad, minutely toothed at the apex. *Receptacle* flat, with narrowly oblong scales slightly longer than the achenes. *Achenes* oblong-linear, about a fifth of an inch long, compressed, setulose on the margins and on the inner side. *Pappus* small, of short, setose hairs, and two opposite bristles five or six times shorter than the achene.—S. A. Skan.

Fig. 1, part of ray-floret; 2, disk-floret and scale of the receptacle; 3, anthers; 4, upper portion of style:—*all enlarged.*

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M. J. del. et lith.

Vincent Brooks, Day & Son Lith. Imp.

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Tab. 8111.

RHODODENDRON Fordii.

China.

Ericaceæ. Tribe Rhodoreæ.

Rhododendron, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 599.

Rhododendron Fordii, *Hemsl. in Kew Bull.* 1894, p. 5; speciei ex affinitate *R. Fortunei*, Lindl. (B. M. t. 5596) et *R. brachycarpi*, D. Don (B. M. t. 7881), sed ab ambobus foliis minoribus basi cuneatis et florum colore differt.

Frutex demum circiter 8-pedalis, ramulis floriferis tortuosis glabrescentibus apice tantum foliiferis. *Folia* distincte petiolata, crassa, coriacea, primum floccoso-tomentosa, fulva, cito glabrescentia, obovato-lanceolata, 2–3 poll. longa, apice rotundata, deorsum attenuata. *Corymbi* 4–6-flori; bracteæ coriaceæ, glutinosæ, fulvæ glabrescentes, lanceolatæ, acutæ, exteriores gradatim minores; pedicelli ferrugineo-pubescentes, quam folia breviores. *Flores* circiter 3 poll. diametro, intus albi, corollæ lobo superiore roseo maculoso, extus primum roseo-purpurei. *Calyx* parvus, lobis triangularibus acutis. *Corolla* 5-loba, lobis rotundatis emarginatis. *Stamina* sæpius 10, inæqualia, longiora corollam fere æquantia, filamentis infra medium puberulis; antheræ aurantiacæ. *Ovarium* pilis stellatis vestitum; stylus stamina paullo excedens, in parte inferiore pilis paucis glandulosis præditus. *Capsula* ignota.

The genus *Rhododendron* is spread all around the northern hemisphere, extending southward to Florida and California in America, and in the East southward to New Guinea and North Australia, with the greatest concentration of species in China, chiefly in the western provinces. About 150 Chinese species have been described, and there are probably not fewer than twenty-five undescribed species in the Kew Herbarium. Considering the immense areas of unexplored China in connection with the fact that many, perhaps most of the species are quite local, the total number of species inhabiting that country is probably not under 250. *R. Fordii* is an eastern species, collected by a native in Lantao Island, in 1889, for the Hong Kong Botanic Garden. Lantao, it may be mentioned, is considerably larger than, and lies a little to the west of Hong Kong. Plants were raised at Kew from seeds sent in 1894 by Mr. C. Ford, I.S.O., F.L.S., at that time Superintendent of the Hong Kong Botanic Garden, and it has been widely distributed to other gardens. It is a very pretty species, the flower-buds being of a bright purple-red, and the expanded flowers white inside, with a slight

spotting of red on the uppermost lobe. The plant from which the figure was made flowered in May in a greenhouse, and it is not hardy at Kew.

Descr.—A tortuously branched, glabrescent shrub, reaching a height of eight feet. *Leaves* clustered at the tips of the branches, distinctly stalked, thick, leathery, when young clothed, especially on the undersurface, with pale brown felt, obovate-lanceolate, two to three inches long, rounded at the tip, narrowed downwards. *Corymbs* four- to six-flowered; bracts leathery, glutinous, lanceolate, acute, outer ones gradually smaller; pedicels clothed with a rusty pubescence, shorter than the leaves. *Flowers* about three inches in diameter. *Calyx* small; teeth triangular, acute. *Corolla* five-lobed; lobes rounded, notched. *Stamens* usually ten, unequal, the longer ones nearly equalling the corolla; filaments slightly hairy below the middle; anthers yellow. *Ovary* clothed with stellate hairs; style slightly glandular in the lower part, a little longer than the stamens. *Capsule* unknown.—W. Botting Hemsley.

Fig. 1, portion of leaf, under surface; 2, hairs from the ovary: 3, calyx and pistil; 4 and 5, stamens:—*all enlarged.*

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